

No 4



**NO TRESPASSING**  
A 'Keep Out' Utility For Your Beeb

**THE MICRO MUSIC  
REVOLUTION**

Get Hip To The Chip

**SPECTRUM AND  
ATARI GRAPHICS**

**WIN AN M5  
COMPUTER**

JULY 1984

85p



**NEWS  
REVIEWS  
GAMES PROGS**

**MERSEY BYTE!**  
The Computer Knives Are Out!

    **LAPSE**  
COMMODORE 64

  **NDER**  **NATCH** **&**  
48K SPECTRUM

**Machine**  
...the name  
of the game



# SUPERPUTERS OFF TO SHAKY START

AS THE MSX threat looms ever nearer in the "affordable" home computer market, manufacturers in Britain and the USA could just be facing a dodgy autumn — if not a winter of discontent — according to informed industry sources.

Of the Brit super-computers, the Sinclair QL is now up and running — and attracting excellent reviews despite the lash-up with the "dongle" that attended its real-time (as opposed to promised) launch date. However the bad feeling that grew up as a result of late delivery has not gone away;

while the irritation over the large sums of money freely available (at zero interest) to Sinclair throughout the waiting period has now materialised into active consumerist aggravation.

Enterprise (né Elan, né Flan) is still booked to appear next month — after delays caused by problems with the dedicated video chip. These delays are widely seen as having affected Enterprise's chances short-term — though if the machine lives up to its specifications it could still attract a

sizeable user base.

Of the British White Hopes, only the Amstrad CPC 464 all-in-one machine, with its superfast BASIC and other goodies, has actually appeared on time and as promised.

The American Coleco Adam, launched in 1983 (though not delivered until early summer 1984) has been dogged by scathing reviews and poor sales (especially in the USA, where it counts), and rumours are now rife of its pending withdrawal from the market. Ailing giant Atari have still failed to

make substantial inroads into the UK market with their XL series, and are now more than ever committed to the Atari-Soft project (targeted on Brit computers like Spectrum and US rivals like Commodore).

Meanwhile the standardisation of operating systems inherent in the Microsoft-Japanese MSX project promises to rationalise the domestic computer scene — say some — in such a way as to leave very little room for home-grown competition. We'll keep you posted.



## WHO'S DA MUG, MUGSY?

MY NAME is Friday. I'm a cop. Things had been pretty quiet that day, just the usual crop of homicides and muggings. Then the call came — the guys at BIG K had problems. I rushed over to their office. They were right.

A couple of criminal-looking types had taken over the joint. By their clothes they looked like ageing ex-members of the cast of "Bugsy". Fedoras, spats, shades, the works. They carried violin cases but sure didn't look like budding Stefan Grappellis.

One lounged by the window. "Nice pice a' glass ja got here, fellas. Real shame if sumthin' happened to it — long way down, too. Ain't dat right, Joey?" His partner grunted agreement and reached for his violin case.

My hand gripped my heater. The case opened. Inside there was no rod, no violin, just dozens of copies of a game called *Mugsy*.

"Da Boss Lady wants yuh should revoo dis suppoib noo Spectrum game. An' she wants you should say nice things about it, dig?" So saying the creep forced a cassette onto the covering BIG K staff. "Mugsy is da name," he spat. "It's noo an' it's neat an' we don't wanna haveta come back an' tell yuh about it again, geddit?"

I summed up the situation instantly. It was the Melbourne House Mob, already wanted for countless crimes against good taste. Seems the Boss Lady had a new game she wanted people to know about and had hired these two gungels to put the pressure on the press, something that nobody but nobody gets away with. I took them downtown for booking. The game stayed at BIG K. They might even review it — voluntarily.

There are eight million tales of Software Intimidation — this has been one of them.

## ZAPPING ON THE RATES

HOT ON the heels of that Tour of the Universe (see page 75) comes news of a high-tech Theme Park on the rates!

One as-yet-unnamed county council in the north of England has employed a firm of leisure consultants to find out just what they could put in such a park. Computerised simulators and laser-disc games that you walk through(!) are high on the list of possibilities. A bank of arcade games two acres in size is also mooted. It would take every game as it came onto the market.

The park might also function as a museum for great computers and games that you have loved. "Secret games experiences crafted by electronic leisure specialists," are also promised, whatever these are.

When BIG K can pin down which council can afford such splendour we'll let you know...

Smash the cuts, OK?



Who's this? M. SMITH completing the 964th screen of *Positively Obsessive Miner III*? No, just one of the EVIL DEAD, celebrating the release of the Palace Software game of the same name on CBM 64.



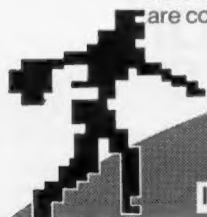
# GAMES, GAMES, GAMES.

(((  **OVER 1,500 GAMES TO PLAY**

Software Index is the magazine guide to the thousands of Software Programs available in shops and by post.

It's packed full with GAMES Software—what the games are and where to buy them.

**PLUS** Over 700 Educational programs are covered as well.



Don't miss out on the wide choice... **GET**

**In your newsagents NOW**

It's the only guide to software programs for the eight top Micros.

BBC

VIC 20

SPECTRUM

COMMODORE 64

ORIC 1/ATMOS

ZX 81

DRAGON

ATARI 400/800

User Guide to Microcomputer Software

## SOFTWARE INDEX

1984 No.3 £1.50

# **STOP** PLAYING AROUND **GO** TO

## **22** **VIRGIN** **GAMES** **CENTRE** 01-637 7911

# **OXFORD STREET** **LONDON W1.**

for the widest range of software for the ZX Spectrum, Commodore 64, VIC 20, and Atari plus many titles for the Dragon, Apple, BBC and Electron.

New titles are stocked within hours of release – call our friendly knowledgeable staff for details.

**VIRGIN GAMES CENTRE, 22 OXFORD ST, LONDON W1. 01-637 7911**



# NO REGRETS, SAY ATARI AT NEW GAMES LAUNCH

"THERE WILL be no compromise for the sake of cost." So said Atari International's U.K. Marketing Director of the much commented upon high price of Atari software in the British market. The remark was made at the launch of a new range of Atari computer and video game software in May. Though prices still remained high (compared to most other companies) some movement downwards was noticed on the prices of the new games.

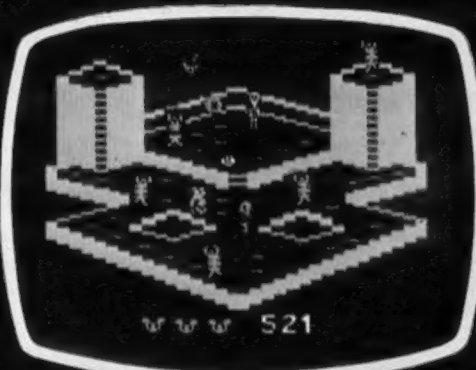
*Millipede* and *Crystal Castles* are the latest arcade hits to appear in the VCS format, at £24.99 and £29.99 respectively. *Oscar's Trash Race*, based on TV's 'Sesame Street', comes in for the nippers at £19.99.

*Millipede* also appears — as a ROM cart for the Home Computer System, along with *Moon Patrol* — £24.99 each.

The second wave of AtariSoft releases brings more arcade classics to major micros.

*Pole Position* appears in cassette-based versions for Spectrum 48K and BBC at £14.99 each and as a ROM for the Commodore 64, £24.99. *Robotron: 2084* comes in Spectrum 48K, BBC and Electron editions at £9.99 each, with *Ms Pac-Man* in Beeb and Electron formats at £12.99.

*Dig Dug* is available in the BBC version now and should hit the Electron market next month, both £9.99. That just leaves *Donkey Kong Jr.* swinging onto the Spectrum 48K at £14.99.



AtariSoft's *Crystal Castles*

## GARBAGE IN, GARBAGE OUT

by The Shadow

WHICH MAJOR Liverpool software house executive had his house raided earlier this year by CID types looking for dodgy tapes... And which CID force was acting on "information received" from another (rival) major Liverpool software house?... Great town, Liverpool... **The Shadow** knows all, for he walks by night...

Totally Uninteresting Fact No. 74: while many major companies would like to look down on the mighty IBM, **The Shadow's** colleagues at **Big K** actually do! Physically, that is; the mag's lofty eyrie above London's South Bank gives them a *Defender's* eye view of neighbouring **Big Blue** offices... Get your hand off, sir!... **The Shadow** sees all, for he flies by day...

Congrats to **Big K's** Steve Keaton, who conquered his social terrors and his inborn lust for alcohol for long enough to qualify as a *Pole Position* prizewinner (3rd place, actually) at a recent Atari thrash to launch new games... Despite being pipped by two other hacks, Keaton complaineth not, since his prize was a slow but functioning (and

totally safe) Atari Digital Clock, while the unlucky first prizewinner now finds himself committed to a trial circuit of Silverstone... Hello, **Rajeev Sood**, consumer extraordinaire, Department of Unhappy Coincidences: even while an Atari bigwig was being publicly and cheerfully optimistic about the future of the dedicated video-game machine (you know, those things without keyboards), another nail was being driven into the coffin of the ailing format by **Virgin Games Centre's** announcement that no longer will they (largest retail operation in London) sell said systems... It's a tough old world...

Congrats to **Silversoft** for a dazzling, witty (it says here) new concept: in *Worse Things Happen At Sea* (Spectrum 48K) you have to keep a cargo ship going while leaks spring, etc... Nice graphics, good plot line — but the best touch is that the cargo consists of packing cases clearly labelled **QL**. Do **Silversoft** know something **The Shadow** doesn't?... Course not... Logging off...

## CHEAPO SOFTWARE—MAKERS WORRIED

(Overheard on a 'crossed line')

**SOFTWARE HOUSE BIG SHOT:** ...ing terrible! What really gets up my nose is we wanted to do it first.

**2ND SOFTWARE HOUSE BIG SHOT:** Yeah, I know. All those whingeing wailies—

**SHBS:** — Backstreet no-hopers—

**SHBS (2):** ...Complaining and forcing your prices back up.

**SHBS:** Now these Masterchronic—

**SHBS (2):** Masterchronic, you mean.

**SHBS:** Yeah. Cleaning up like we could've. Under two quid a copy and they shifted over 200,000 units in the first month.

**SHBS (2):** Makes you want to weep.

**SHBS:** Yeah, then along comes Atlantis or whatever they're called...

**SHBS (2):** Atlantic Software. They're well in too, I hear.

**SHBS:** I hate them. Anyone would think the punters really wanted cheap software... did you say something?

**SHBS (2):** Me? No.

**SHBS:** Must be something wrong with the line.

**SHBS (2):** 'Ere! You don't think...

(end of tape)

48K SPECTRUM £5.50  
COMMODORE 64 £6.50

**SPLAT!**



48K SPECTRUM CHALLENGE  
FROM INCENTIVE SOFTWARE LTD

48K SPECTRUM £5.50

**MOUNTAINS OF KET**



48K SPECTRUM £5.50  
BBC MODEL B £5.50

**1984**

A GAME OF GOVERNMENT MANAGEMENT



48K SPECTRUM £5.50

**TEMPLE of VRAN**



48K SPECTRUM £5.50

**WHEELS OF STEEL**



INCENTIVE

AVAILABLE FROM LEADING DEALERS EVERYWHERE

OR DIRECT FROM  
Incentive Software Ltd, 54 London St,  
Reading RG1 4SQ (0734) 591678

## The Game: ACORN NIXED BY BEEB LINK?

AFTER THE BBC micro, Acorn are now hotly tipped to supply a games machine for The Game, Yorkshire TV's interactive computer game quiz-show first exclusively reported three months ago in Big K.

But it now appears unlikely that Acorn will produce their Business Machine (the ABM) in time to fit the bill.

Insiders say that Yorkshire TV must first face the wrath of the Independent Broadcasting Authority — who vetoed an ITV micro when the idea first came up last November. And then there's the sticky point of the Acorn TV "monopoly".

New firm Data Technologies can make the BBC micro think like an IBM PC — it's called The Graduate. For £600 (or £669 mail-order) you can use the PC's version of the MS-DOS operating system along with the BBC O/S.

A licensing deal means that Acorn will both sell and support The Graduate. A cut-down version for the Acorn Electron will make the latter the cheapest IBM PC clone on the market — for under £1,000 all-told. And this is just the machine that YTV want, with the proviso that a modem can be squeezed in the same box without taking the price over £1,000.

Yorkshire TV want to clash in on all those BBC micros out in the market and Acorn are keen to help. All they need now is a nod from the BBC O/S.

BY THIS TIME next year, as many as one in three computer owners may possess a disc drive or some similar form of fast-access mass storage.

And in recognition of this growing trend, more and more games producers are now putting their eggs in the disc-drive basket.

Acornsoft, of course, have for long made their games software available on both disc and cassette, reflecting the vast choice of disc systems (Acorn's own, Torch, Cumana, etc) for the Model B machine. The huge popularity of the Commodore 64 has also stimulated demand for CBM's own rather slow disc system — as recognised by K-Tel, who are now firmly dedicated to Commodore discs (while continuing to issue on cassette interim) and several other companies.

In the USA, where disc drives cost (relatively) less, cassette systems are considered primitive,

first-user-only devices; and it is from the US experience (4 out of 5 computer owners apparently on disc) that British companies are now moving across to the superior — but far more expensive — system.

"We firmly believe that disc drives are the coming thing, certainly long-term — and we intend to be seen as a long-term operation", a K-Tel spokesman told BIG K. The company's philosophy is that, once a computer owner has bought his machine, his next major purchase will be a disc system — "and we want to be there ready and waiting".

In addition to the high-speed loading and saving time associated with discs, other advantages are that the large amounts of storage possible can effectively increase the "virtual RAM" of a machine. This is particularly true of adventures — still the fastest-growing type of game in overall

popularity terms — where at any given location the next stage of a long program (too big to be stored in RAM) can be auto-booted, with special variables being transferred from one stage of the program to the next.

Joker in the disc pack is of course Sinclair, whose compact and now proven Microdrive system is nearly as fast as most discs, and considerably less expensive. Another problem for the UK hardware men is that while casings, etc., are manufactured here, most disc innards are imported from — you guessed it — Japan. A third poser is the combat currently being waged between the standard 5 1/4" floppy size, and the new micro-discs made by Sony (3 1/2") and Hitachi (3") — both of which can almost match the larger disc sizes in storage capability and access time.

A new format war? We'll keep you posted...

## FROM RUSSIA WITH LOVE

A COMMUNIST microcomputer called Agatha is good news for Apple II users — but bad news for the corporation itself. Agatha will be the star of Moscow's first Computer Fair to be held next month.

The Soviet Union has previewed a version of the Apple II, called something which translates as "Agatha", but which is allegedly many times faster. That's because it employs high-speed versions of the basic 6502 chip called 65C02: C standing for the advanced CMOS process of making the chips.

But that's not all. The entire East Bloc is to cooperate on a research plan to build the next generation

of thinking machines. One American spokesman said that it was the start of still further competition between super-powers.

"First came the space-race, now we're onto the thinking computer race," he said. The West has already got to the starting blocks with multimillion dollar, Fifth Generation Computer System plans.

And at the Moscow Fair the Soviets will call for technical cooperation with the West on the thinking machine and, ultimately, more trade. If they're successful then Agatha could knock the spots off the Apple II's now in our shops.

## LETTER FROM MOSCOW By Our Special Correspondent

I am writing to give you update on progress with our own computers. As you are painfully aware, Comrades, the imperialistic capitalists, with their "Free Trade" (Hail) refuse to sell us any of their devices, and so we devise better ones!

Old Doktor Pavlov is still with us (he's around 130 now, I am told, and still on the same antifreeze we gave B.) and he's working on a revolutionary transmission system.

Is a line of lobotomised dogs, each holding tail of next dog between teeth. Comrade Doktor has trained them to close their mouths whenever tails are squeezed. So you squeeze tail of first dog, pulse travels down to last dog at speed of bite. Amazing.

Progress on miniaturisation goes slowly. Our Tesla Coil technology does not lend itself to such indignities. The research team has experience grave problems with crosstalk, and one even dared to blame our great Tesla Coil itself, saying that the use of 11,000 Volts to signify a 1 was "excessive". As he was obviously demented, poor fellow, we sacked him. (Then threw the sack in the Volga).

Still, comrades, some things moving very fast indeed. RNSI, the Russian National Standards Institute have agreed a code called RSCII (pronounced "Ruski"). And RusChip, the state manufacturers of highly technological equipment have brought out their RC280 "Molotov" and RC8502 "Karl" processors in an amazing ten days after work was started! Design team has been awarded Order of Lenin, but for some technical reason new chips are in very short supply.

Anyhow, we were very interested and a little concerned with the ZX80 you sent to us last week. It outperformed our business models by a factor of 10 (and so much memory!), so now we're fitting it into the next SS series missiles. I understand Sir Sinclair bringing out new machine...

Send round the boys and take all he's got. Tell him to invent some story about bugs in design holding up production.

Also find enclosed one case Vodka. Remember Dotechkesky? When he got sent to Siberia for eating crisps during the 76 May Day parade? Haaa! He managed to become big shot in the spirits industry down there and is sending freebies to everyone who's anyone. The boys at Volgograd know how it feels to be so far from home among the savages and so rustled up a case for you.

Send new Sinclair equipment soon. Don't forget to use the Series X16 30ft by 30ft Diplomatic Bag!

Yours ever,

*Boris*



# SHOCK! HORROR! SCANDAL!

**SHOCK!** CITYATTAK. The seven screen, all action, machine code game. Superb graphics, smooth game play, a tough challenge for even the hardened arcade action addict.  
Now available on disk.

**HORROR!** The journey of your life ... or death!  
**ODYSSEY.** Described by Popular Computing Weekly as: 'Addictive with superb sound effects. An arcade game worthy of Jeff Minter for its pure speed of action!' Pick of the week (12th - 18th April 1984).  
Now available on disk.

**SCANDAL!** IT'S ONLY ROCK'N'ROLL.  
Your chance to succeed where millions of hopefuls fade. To make the big time in 'Showbiz' and show the world that you're a superstar, not just another dreamer.  
Now available on disk.



Larger branches of John Menzies, Boots, and Computer Dealers nationwide.

K-tel Software can also be obtained by sending a cheque or postal order made payable to:- K-tel International (UK) Ltd. At 620 Western Avenue, London, W3 0TU. Allow 28 days for delivery.



**TAPE £6.95**  
**DISK £9.95**  
inc. VAT.



Available for  
**COMMODORE 64**  
**DRAGON 32 TANDY COLOUR**





# Cuthbert in Space



The Federal Chief has decided that Cuthbert is to go on a mission of plunder against the Moronian's Solar System. Cuthbert lands his space craft on each planet but then has to refuel by stealing pods from the Moronian fuel dumps whilst avoiding the Solar Meteoroid Barrage. After filling up he goes and plunders as much loot as possible before take-off. All could go well but when he gets a mal-function he must send a pilotless shuttle to obtain spares and take-off before the Moronian's bomb detonates.

**CASSETTE £8 DISK £9.95**

Mail Order Sales from  
 Microdeal Mail Order 41 Truro Rd,  
 St. Austell Cornwall PL25 5JE

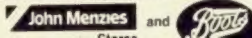
Credit Card Sales      
 Phone 0726 3456



Dealers Contact  
**MICRODEAL DISTRIBUTION**  
 0726-3456  
 or **WEBSTERS SOFTWARE**  
 0483 62222

## MICRODEAL

Selected Microdeal Titles available from computer dealers nationwide or from larger branches of





# GOD'S GREATEST!

48K Spectrum

Available soon for CBM 64

This is  
no Fairytale  
it's for  
REAL!



by CHRIS KERRY



ACTUAL SCREEN DISPLAYS  
The Most Graphical  
Arcade Simulation  
Ever Produced

AVAILABLE FROM SELECTED BRANCHES OF:

John Menzies

WHSMITH

Boots

makro

Divine

Greenchip

REDBRAND

LASKYS

ALSO AVAILABLE AT ALL  
USUAL SOFTWARE OUTLETS.

RETAILERS CONTACT:

MICRO DEALER UK Ltd

Tiger trader

Lightning

PRISM

CentreSoft

PCS DISTRIBUTION

Bulldog

SDL

ONLY  
£5.95

If you have difficulty in obtaining your copy, just fill in the Coupon below.

Post coupon now to: Thor (Computer Software) Co. Ltd.,  
Erebus Industrial Estate, Liverpool,  
Merseyside L8 1AF Tel: 081-283 8531/2

I enclose Cheque/PO for £ \_\_\_\_\_

Name \_\_\_\_\_

Address \_\_\_\_\_

Credit Cards - Orders accepted by Phone -  
081-283 8531/2

DISTRIBUTORS AND OVERSEAS ENQUIRIES CONTACT PAUL 051-263 8521/2



# KOSMIC KANGA



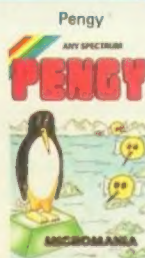
**KOSMIC KANGA**, a multi-screen, amazing, arcade standard original action game. Featuring superbly animated graphics and packed full of arcade features. Help **KANGA** find his space ship so he can return home to his planet. Leap about buildings, trees, clouds etc., pick up bonuses and throw boxing gloves at the enemies.

Keyboard or most joystick. **48K SPECTRUM** for most other Computers soon.



Tutankhamun

48K Spectrum



Pengy

16K/48K Spectrum



Invasion Force

48K Spectrum plus stack SLR

## ONLY £5.95 EACH

Available from most good software retailers. If your local software retailer is out of stock, send cheque/P.O. to Micromania, 14 Lower Hill Rd., Epsom, Surrey, KT19 8LT., and we will send your order by first class post free.

# MICROMANIA



# ZIP CODE

Photo: 20th Century Fox

## How Hawkeye fixed Atari's liver...

WERE IT not for the Korean War, Atari might be out of business today.

Follow closely: because of his involvement as a front-line medic, a doctor wrote a fictionalized account of his Korean experiences. Whereas his book wasn't exactly a blockbuster, it did become a very, very successful movie.

In turn, the movie begat an even more successful television series.

The series was M\*A\*S\*H, and it turned Alan Alda into America's biggest and most trusted star.

Throughout M\*A\*S\*H's eleven year run, Alan decided to exploit his trust by succumbing to product endorsements, other than for his own motion pictures. But about a nanosecond after abandoning M\*A\*S\*H — i.e. last summer — Alda signed a lucrative contract, selling his considerable credibility to Warner Communications for use in saving Atari's skin.

### DETERIORATION

For Atari was in deep trouble. The company lost \$539 million and laid off over 2,500 employees last year. Then they managed to pull off the near impossible: they actually lost a fortune on merchandising items based upon the movies *E.T.* and *Raiders of the Lost Ark*. Of course, they were losing money on lots of other game carts as well.

Faced with competition from Coleco, sales of the 2600 were in a deep slump

and retailers were closing out units at about \$50.00 (£35.00). Their all-new Atari 5200 proved to be an initial disappointment — it had a tough joystick, a limited software catalogue, and its games were no better than those made for the Atari 400. But the 400 was also in the bargain-basement bins, selling for about one hundred dollars less than the 5200. With Commodore selling their 64s by the truckload and Coleco's forthcoming Adam looking like the Volksmicro, Atari had to find the future — and then find a way to sell that future to a doubtful public.

### TRANSFUSION

Hence Alan Alda. Mr. Credibility. Mr. Honesty. And, as far as television was concerned, a commercial virgin. Atari dumped its fledgling line of new computers (the 1200, the 1400, and the 1450) and concentrated on two new machines: the 600 and a new 800. These micros were everything the previous Atari machines were not: they were well designed, very family oriented, extremely useful, and played games like nobody's business. Most important, they used the software already written for the 400 and the 800. And with Alda's clever commercials behind them, they quickly became the computers for families that couldn't afford Apples or IBMs. Most families, in other words.

Atari also cleaned house.



They hired a new boss, James Morgan, who made a lot of extremely smart moves.

After straightening the company's chaotic management structure, Morgan put a lid on new product announcements. Henceforth, Atari was no longer in the business of getting gamers excited about stuff they would never see.

That's smart, because as a gamer/reporter, I myself am still waiting on Atari's 3-D game system and on their wireless 2600. I played prototypes of both, of course; but it is much easier to make a prototype of something than it is to make a marketable production model. Just ask Coleco.

### POST OP

Atari's got something between seven and ten million 2600s still operating in American homes, so there will be a market for their game software for quite some time. The 5200 has finally taken off with a great deal of top-notch software support: Atari has taken a lot of Intellivision and Coleco gamers and brought them back into the Atari fold.

Their future lies in the success of the new micros — if Atari blows it, they won't get

a second chance. The field is simply too competitive.

Atari isn't out of the water yet, but at least they can sight land.

## STATESIDE CHATTER...

Commodore's alleged 264 and 364 might not make it — the former was unveiled at the Winter Consumer Electronics Show to a lot of head-scratching and general befuddlement; many folks think it is inferior to the original Commodore 64. As of this writing, retailers have seen neither hide nor hair of the 364. If Commodore is going to stay in the low-end micro market, they're going to have to come up with something, and it better play games, and it better be good.

Coleco announced an Adam disc drive — now we'll have to see if they can deliver. Of course, they just laid off 1,300 workers after posting a \$35 million loss for the last three months of 1983. Someday they'll learn the lesson: you can't produce an adequate number of good games for several semi-compatible systems (the Coleco, the driving module, the sports module, the roller controller, and the Adam).

More next month.

On with  
your helm,  
your tunic,  
your trusty  
sword. The  
foes await  
outside the  
castle. But hold,  
strange sorcery  
has been at work.  
The laws of time  
and space have  
been distorted  
bringing warriors  
from different time  
zones to your door. No  
matter, there is battle to  
be done!

[illegible]

```

100 DATA 10.154.130.41.171.160.42.138
110 41.156.160.10.34.123.2.170.8.3.
120 0
130 DATA 2.138.0.2.138.0.2.138.0.2.
140 0.138.0.2.10.0.3.207.0.0
150 DATA 51.48.0.11.54.0.23.64.15.
160 11.34.43.21.0.255.20.0.252.170.3
170 0
180 DATA 170.141.0.238.124.0.169.112.
190 0.255.128.0.136.128.0.171.128.0.
200 128.0
210 DATA 51.54.0.51.54.0.51.54.0.51.
220 54.0.51.54.0.55.50.0.85.60.0.0
230 DATA 51.54.0.11.54.0.23.64.0.213.
240 36.0.1.0.0.20.0.0.170.0.0
250 DATA 170.123.0.138.128.0.169.127.
260 128.0.128.128.138.14.1252.171.
270 128.48.128.128
280 DATA 0.51.54.0.51.54.0.51.54.0.51.
290 54.0.51.54.0.55.60.0.85.60.0.0
300 0000.1200
310 POKE 10240 POKE 10400 0
320 0041.10
330 IF 0041=0 THEN FOR I=1 TO 100
340 FOR J=1 TO 100
350 POKE 10400+I*100+J 0
360 POKE 10400+I*100+J 0
370 POKE 10400+I*100+J 0
380 POKE 10400+I*100+J 0
390 POKE 10400+I*100+J 0
400 POKE 10400+I*100+J 0
410 POKE 10400+I*100+J 0
420 POKE 10400+I*100+J 0
430 POKE 10400+I*100+J 0
440 POKE 10400+I*100+J 0
450 POKE 10400+I*100+J 0
460 POKE 10400+I*100+J 0
470 POKE 10400+I*100+J 0
480 POKE 10400+I*100+J 0
490 POKE 10400+I*100+J 0
500 DATA 0000.1200

```

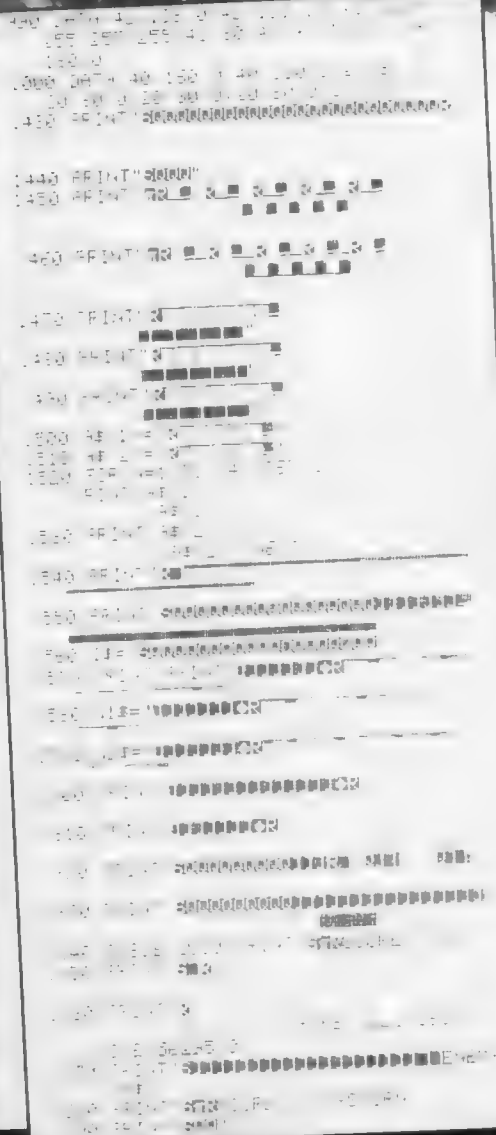
```

10 DATA 10.154.130.41.171.160.42.138
20 41.156.160.10.34.123.2.170.8.3.
30 0
40 DATA 2.138.0.2.138.0.2.138.0.2.
50 0.138.0.2.10.0.3.207.0.0
60 DATA 51.48.0.11.54.0.23.64.15.
70 11.34.43.21.0.255.20.0.252.170.3
80 0
90 DATA 170.141.0.238.124.0.169.112.
100 0.255.128.0.136.128.0.171.128.0.
110 128.0
120 DATA 51.54.0.51.54.0.51.54.0.51.
130 54.0.51.54.0.55.50.0.85.60.0.0
140 DATA 51.54.0.11.54.0.23.64.0.213.
150 36.0.1.0.0.20.0.0.170.0.0
160 DATA 170.123.0.138.128.0.169.127.
170 128.0.128.128.138.14.1252.171.
180 128.48.128.128
190 DATA 0.51.54.0.51.54.0.51.54.0.51.
200 54.0.51.54.0.55.60.0.85.60.0.0
210 0000.1200
220 POKE 10240 POKE 10400 0
230 0041.10
240 IF 0041=0 THEN FOR I=1 TO 100
250 FOR J=1 TO 100
260 POKE 10400+I*100+J 0
270 POKE 10400+I*100+J 0
280 POKE 10400+I*100+J 0
290 POKE 10400+I*100+J 0
300 POKE 10400+I*100+J 0
310 POKE 10400+I*100+J 0
320 POKE 10400+I*100+J 0
330 POKE 10400+I*100+J 0
340 POKE 10400+I*100+J 0
350 POKE 10400+I*100+J 0
360 POKE 10400+I*100+J 0
370 POKE 10400+I*100+J 0
380 POKE 10400+I*100+J 0
390 POKE 10400+I*100+J 0
400 POKE 10400+I*100+J 0
410 POKE 10400+I*100+J 0
420 POKE 10400+I*100+J 0
430 POKE 10400+I*100+J 0
440 POKE 10400+I*100+J 0
450 POKE 10400+I*100+J 0
460 POKE 10400+I*100+J 0
470 POKE 10400+I*100+J 0
480 POKE 10400+I*100+J 0
490 POKE 10400+I*100+J 0
500 DATA 0000.1200

```







340 SET 100  
 350 SET 100  
 360 IF 100 = 100 THEN 100  
 370 IF 100 = 100 THEN 100  
 380 IF 100 = 100 THEN 100  
 390 IF 100 = 100 THEN 100  
 400 IF 100 = 100 THEN 100  
 410 IF 100 = 100 THEN 100  
 420 IF 100 = 100 THEN 100  
 430 IF 100 = 100 THEN 100  
 440 IF 100 = 100 THEN 100  
 450 IF 100 = 100 THEN 100  
 460 IF 100 = 100 THEN 100  
 470 IF 100 = 100 THEN 100  
 480 IF 100 = 100 THEN 100  
 490 IF 100 = 100 THEN 100  
 500 IF 100 = 100 THEN 100  
 510 IF 100 = 100 THEN 100  
 520 IF 100 = 100 THEN 100  
 530 IF 100 = 100 THEN 100  
 540 IF 100 = 100 THEN 100  
 550 IF 100 = 100 THEN 100  
 560 IF 100 = 100 THEN 100  
 570 IF 100 = 100 THEN 100  
 580 IF 100 = 100 THEN 100  
 590 IF 100 = 100 THEN 100  
 600 IF 100 = 100 THEN 100  
 610 IF 100 = 100 THEN 100  
 620 IF 100 = 100 THEN 100  
 630 IF 100 = 100 THEN 100  
 640 IF 100 = 100 THEN 100  
 650 IF 100 = 100 THEN 100  
 660 IF 100 = 100 THEN 100  
 670 IF 100 = 100 THEN 100  
 680 IF 100 = 100 THEN 100  
 690 IF 100 = 100 THEN 100  
 700 IF 100 = 100 THEN 100  
 710 IF 100 = 100 THEN 100  
 720 IF 100 = 100 THEN 100  
 730 IF 100 = 100 THEN 100  
 740 IF 100 = 100 THEN 100  
 750 IF 100 = 100 THEN 100  
 760 IF 100 = 100 THEN 100  
 770 IF 100 = 100 THEN 100  
 780 IF 100 = 100 THEN 100  
 790 IF 100 = 100 THEN 100  
 800 IF 100 = 100 THEN 100  
 810 IF 100 = 100 THEN 100  
 820 IF 100 = 100 THEN 100  
 830 IF 100 = 100 THEN 100  
 840 IF 100 = 100 THEN 100  
 850 IF 100 = 100 THEN 100  
 860 IF 100 = 100 THEN 100  
 870 IF 100 = 100 THEN 100  
 880 IF 100 = 100 THEN 100  
 890 IF 100 = 100 THEN 100  
 900 IF 100 = 100 THEN 100  
 910 IF 100 = 100 THEN 100  
 920 IF 100 = 100 THEN 100  
 930 IF 100 = 100 THEN 100  
 940 IF 100 = 100 THEN 100  
 950 IF 100 = 100 THEN 100  
 960 IF 100 = 100 THEN 100  
 970 IF 100 = 100 THEN 100  
 980 IF 100 = 100 THEN 100  
 990 IF 100 = 100 THEN 100  
 1000 IF 100 = 100 THEN 100

# charts



SP Spectrum, AC Acorn, 64 Commodore 64,

key

V20 Vic 20, 81 ZX 81, DR Dragon 32, OR Oric-1

## TOP 30 GAMES

(Retail)

			SP	AC	64	V20	81	DR	OR	Price
1	4	JET SET WILLY	Software Projects	*						£5.95
2	4	FIGHTER PILOT	Digital Integration	*						£7.95
3	3	ATIC ATAC	Ultimate	*						£5.50
4	2	MANIC MINER	Software Projects	*	*					£7.95
5	1	CHEQUERED FLAG	Psion	*						£6.95
6	1	HUNCHBACK	Ocean	*	*					£6.90
7	15	BLUE THUNDER	Richard Wilcox	*						£5.95
8	5	SCUBA DIVE	Durell	*	*					£6.95
9	16	POGO	Ocean	*						£5.90
10	7	ANT ATTACK	Quicksilva	*						£6.95
11	6	LUNAR JETMAN	Ultimate	*						£5.50
12	27	FRED	Quicksilva	*						£6.95
13	1	NIGHT GUNNER	Digital Integration	*						£6.95
14	8	FLIGHT SIMULATION	Psion	*						£7.95
15	1	CODE NAME MAT	Micromega	*						£6.95
16	1	ZAXXAN	Starzone	*						£5.95
17	1	REVENGE OF THE MUTANT CAMELS	Llamosoft	*	*					£7.50
18	1	SNOOKER	Visions	*	*	*				£8.95
19	19	THE HOBBIT	Melbourne House	*	*	*		*		£14.95
20	17	WHEELIE	Microsphere	*						£5.95
21	22	CHINESE JUGGLER	Ocean	*	*					£6.90
22	13	POOL	CDS	*						£5.95
23	28	THE SNOWMAN	Quicksilva	*						£6.95
24	10	SPACE SHUTTLE	Microdeal	*	*	*		*		£8.00
25	1	TRASHMAN	New Generation	*						£5.95
26	23	THE ALCHEMIST	Imagine	*						£5.50
27	1	TWIN KINGDOM VALLEY	Bug-Byte	*	*	*				£5.95
28	18	BUGABOO	Quicksilva	*	*	*				£7.95
29	1	DEFENDA	Interstellar	*						£5.95
30	12	STONKERS	Imagine	*						£5.50

Compiled by MRIB Computer.

## VIDEO GAMES

(Dedicated Consoles)

1	(1)	POLE POSITION (Atari)
2	(3)	SPACE SHUTTLE (Activision)
3	(2)	SUPER COBRA (Parker)
4	(—)	PITFALL 2 (Activision)
5	(8)	MARIO BROTHERS (Atari)
6	(4)	POPEYE (Parker)
7	(25)	MS PAC-MAN (Atari)
8	(5)	ENDURO (Activision)
9	(7)	DEATH STAR BATTLE (Parker)
10	(6)	Q-BERT (Parker)
11	(—)	FROSTBITE (Activision)
12	(19)	GALAXIAN (Atari)
13	(—)	PHOENIX (Atari)
14	(12)	BATTLE ZONE (Atari)
15	(11)	FROGGER (Parker)
16	(14)	DONKEY KONG (CBS/Coleco)
17	(13)	SNOOPY VS THE RED BARON (Atari)
18	(9)	DIG DUG (Atari)
19	(10)	MOON PATROL (Atari)
20	(15)	PITFALL (Activision)
21	(11)	PAC-MAN (Atari)
22	(18)	BIG BIRD EGG CATCH (Atari)
23	(16)	RIVER RAID (Activision)
24	(17)	TUTANKHAM (Parker)
25	(24)	COOKIE MONSTER MUNCH (Atari)
26	(29)	SPACE INVADERS (Atari)
27	(20)	JUNGLE HUNT (Atari)
28	(27)	CENTPEDE (Atari)
29	(22)	SMURFS (CBS/Coleco)
30	(30)	ROBOT TANK (Activision)

Compiled by MRIB Computer.

ATIC ATAC  
(Ultimate)  
BUMPING BUGGIES  
(Bubble Bus)  
CHUCK-E-EGG  
(A&F Software)  
COLDITZ  
(Phipps Associates)  
CYLON ATTACK  
(A&F Software)  
FIGHTER PILOT  
(Digital Integration)

also selling well  
in mail order...

FLIGHT PATH  
(Anirog)  
THE FOREST  
(Phipps Associates)  
FLYING FEATHERS  
(Bubble Bus)

JET PAC  
(Ultimate)  
KRAKATOA  
(Abbex)  
MEGAWARZ  
(Paramount)

NIGHT RUNNER  
(Digital Integration)  
OUTBACK  
(Paramount)  
PILOT 64  
(Abbex)  
RALLY SPEEDWAY  
(Adventure International)  
SPACE PILOT  
(Anirog)  
TEST MATCH  
(CRL)

To date, Atari's most astonishing game is Pole Position... If you are only going to buy one game, then this is the one you should get.

COMPUTER & VIDEO GAMES.

...Pole Position gives a very strong sense of speed as you hurtle round the track. The super-realism of the three-dimensional effect adds a lot to the game. It is a great graphics demo.

PRACTICAL COMPUTING.

Brilliant!

WHICH MICRO? AND SOFTWARE REVIEW.

...a terrific version of the arcade motor racing game...graphics are superb...sound, too is very good as brakes screech and engines rev-up.

PERSONAL COMPUTER GAMES.

Exciting, exhilarating, excellent, Pole Position takes the lead as the best Atari race game around.

PERSONAL COMPUTER NEWS.



# What can we say?



We're overwhelmed. Though we should just add that with Atarisoft, you can now play Pole Position\* on the Commodore 64, BBC and Spectrum computers, as well as on all Atari® systems. Oh, and we're giving away free a Grand Prix kit and full colour wall chart with every game.

**POLE POSITION**  
*from* **ATARI**<sup>®</sup>**SOFT**<sup>™</sup>

IT MAY seem a long time ago now, but in 1964 there seemed to be quite a lot going for the city of Liverpool

I'm not talking about the city itself. As someone who grew up there I remained convinced that Liverpool was, and most likely still is, a dump of the first magnitude (but we won't go into that). What I'm referring to is the famous explosion of pop (we still call it 'pop') talent, which twenty years ago immediately characterised the 'Pool as a city with a talent for the unexpected — just as everybody else, me included, was writing it off

These days we find the great and gungy city beside the fair-flowing Mersey (a river with its own very special breed of Goldfish) once more visibly down on its luck. Unemployment, always high, is now critical. The city

council are at loggerheads (not half) with Westminster. By the time you read this Liverpool may be officially bankrupt. It's a gloomy picture

Except for one small thing. From the smouldering ash-heaps of Liverpool 8 a strange, alien, multicoloured tendril is creeping. And another! And two more! They pulse in glowing electronic waves but are clearly thriving, growing fast. There is an eerie tweeting sound and one can see bundles of banknotes clutched in Venus Fly Trap-like mandibles. The earth begins to vibrate

No! No! It's... It's Software!

And how. Although there are at least half a dozen games designing operations now under way in Liverpool, this report concentrates on

only the three biggest: the uneasy legs of a single tripod (assuming you like metaphors). They are *Bug-Byte*, the original Liverpool games company and the wellspring of the other two, *Imagine*, who need no introduction from me, and the newest of the three, *Software Projects*, formed out of breakaways from the first two, while the second had itself been formed by people breaking away from the first. There is, in a word, a close causal relationship between the three Merseyside games companies, but despite this, they don't appear to like each other very much. There are dark sayings, and unorthodox doings up there beside the Mersey; and even darker rumours. Yet with all the Borgia-style betrayals and poisoning of each others' soup, there is still a lot to be proud of

St Johns  
Biscuits  
wanted it but  
the council  
drove too hard  
a bargain

## MERSEY BYTE!

Liverpool — where the echoes of the Mersey Beat sixties have given way to the sound of machine code. TONY TYLER returns to his roots to check out the Big Three in 'Scousesoft'...

## WHEN THE BUG BIT BACK

IN THE beginning there was Bug-Byte

Well, actually, in the *real* beginning there was University College, Oxford, and within those dreamlike portals there was Tony Baden and Tony Milner, reading Chemistry

And lo, on a day the man Baden said to the man Milner, I have an idea, Tone, and the man Milner said, Shoot, Tone; whereby the man Baden said, let us go into the world, you with your Acorn Atom and me with my ZX80 and make a great deal of money, for verily, I have had it to the teeth with the Stinks Lab and these ridiculous gowns.

And the man Milner said, just what I was thinking, Tone; and he spoke the truth

And on a day these two departed the city of the dreaming spires and went into the world with a total capital of a tenner; whereof they spent £4.50 on a single classified ad in *Computing Today*, and they chose Baden's home town Liverpool as their base, and all was gladness, for the orders came pouring in.

Well, it was more or less like that. The names are true, as is the capital of £10.00, and the Atom was the ZX80 — as was

the fact that in those days (May 1980) Bug-Byte had no duplicating facilities, so that each mail-order requirement meant a SAVE routine

Throughout their first year Mail Order was the name of the game, with the two roles gradually coalescing into Milner (the programmer) and Baden (the marketing man). Throughout 1981 they took on staff, man by man; and apart from occasional hiccups — almost all of these of a personal rather than product kind — they just grew and grew, like many another software company during the previous two or three years. Their first real hit was *Mazogs* for ZX81 (written by Don Priestly, now with DKTronics), and — unusually — they were into Utilities quite early on too, with editors / assemblers / disassemblers and the like all available. And *Spectrum Invaders* came along to swell the coffers, as did *Spectres*, designed by one Dave Lawson.

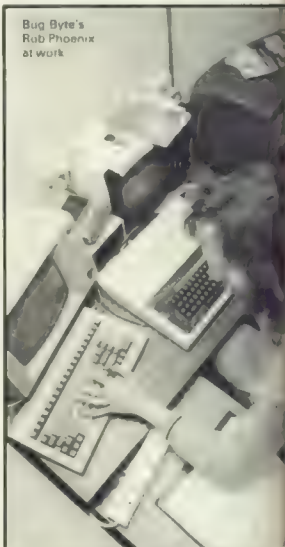
### UPWARDS AND OUTWARDS

Within a year of this they had severely outgrown their original office, so they hight themselves to Canning Place, anent the docks. Forty-five Big Ones into the fitting out of what was now Liverpool's largest and fastest-growing software house; and at

the same time, bearing in mind all those SAVES, they inaugurated Spool, their own duplication company. Down came their overheads in a rush, while up went their productivity

Star programmer Dave Lawson left in July 1982 — rather

Bug Byte's  
Rob Phoenix  
at work





unexpectedly, one gathers. Two months later Mark Butler, another Bug-Byte programmer, had followed Lawson (which puzzled Baden at the time, since in his estimation Butler had harboured unkind thoughts about Lawson); and the first, and greatest of Bug-Byte's rivals had appeared: Imagine Software. At about the same time the bespectacled author of *Panic* departed as well, and in the same direction.

## EXIT THE MINER

Bug-Byte faltered slightly at this sudden loss of talent, but recovered swiftly. By the following April they had yet another potential star working for them on a freelance basis: Matthew Smith. Smith's first effort for Bug-Byte was *Slyx*, which all sides admit bombed out. And then Smith produced *Manic*

enough, I'd like to know what is."

How was freelancer Smith able to take the Miner with him? Hadn't he signed the old boy away? "There was a clause in our original contract," explained Baden, "which, due to a comma in the wrong place, or a missing comma, can't remember which, was a bit ambiguous. Rather than spend a lot of time and money fighting it in court, we agreed to let him take the game with him. At the time, you see, Matthew was a minor, and our legal people told us that against a minor in open court nobody has a chance."

Baden is "neutral" about the idea of more and more software operations setting up house in Liverpool. He also carefully avoids negative feelings concerning Imagine and SP, as far as he can.

# FERRARI 'CROSS THE MERSEY

IF IMAGINE didn't exist, somebody would have to invent them.

This company has a national — never mind local — image as wide as a barn door. *Flamboyant* is a fair description. They have more than halfway succeeded in making themselves into minor national figures. One of the founder-directors rides a 170 mph superbike and has serious ambitions concerning the Isle of Man TT. Eugene Evans is the boy-wonder programmer even the *Daily Telegraph* has heard of. And, parked all over yellow lines outside the company's business-district offices, is a constantly rotating assort-

work, which on the face of it seems reasonable enough. Imagine have their own so-called MegaGames in a secret, near-finished state (on these, more in a moment). They dislike inaccurate press speculation but themselves do little to help. They are surrounded by rumour.

## THE 'A' TEAM

The company was formed slightly less than two years ago by two former Bug-Byte employees, programmers Dave Lawson and Mark Butler. They were shortly afterwards joined by a third, younger Bug-Byte programmer, Eugene Evans, but for unexplained reasons Evans was never invited to sit on the Board and remains a jobbing, if senior, games designer. Since then Imagine have barely looked back. Growth has been staggering — among their many satisfying hits being Evans' own *Arcadia* for Spectrum (and now 64), a ground-based shoot-'em-down with undeniably classic overtones. It has sold hundreds of thousands of copies.

There are more recent hits. Ian Weatherburn's *Alchemist* is a remarkable and again definitive piece of work, an 'ArcVenture' with nifty subroutines and a killing pace. And John Gibson, oldest of Imagine's 'A Team', has recently produced a classy miniaturised strategic wargame, *Stonkers*. The upcoming MegaGames ('We've found a way of very considerably enhancing the power of the personal computer' — Bruce Everiss) are code-named *Psyclapse* and *Bandersnatch*.

## OPEN SPACES

Their offices — formerly of an Arab shipping line — are immense; the only possible word. Seemingly hundreds of feet apart — a stiff walk away — sit the programmers in teams of

## SECRETIVE

They are also (to use an old hippy word) *misterioso*. By which I mean there's a lot of "No, you can't point a camera over there" and "You mustn't go in that room". Fiddling idly (but closely supervised) with a Macintosh, your reporter accidentally accessed a menu and felt very strongly that he was within a nanosecond of getting his fingers rapped. Stern notices inhabit the walls ("These machines have been put here by Dave Lawson and MUST NOT BE TOUCHED"). Getting into Imagine is also not easy, due to the electronic security system.

This is all to protect their

Anonymous  
Imagine  
programmer

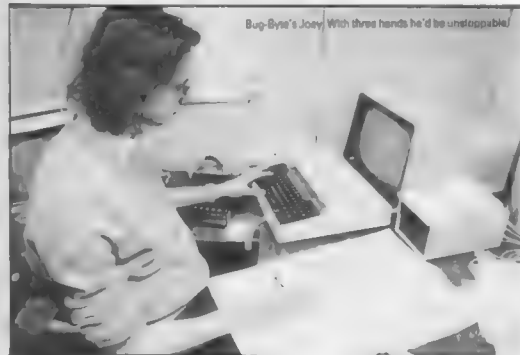
## Miner

More aggro surrounds this game, seemingly, than attends US-Soviet relations. There are claims and counter-claims, all exacerbated by the fact that Matthew Smith has of course now also left Bug-Byte, and is one-third of the newest company, Software Projects. He having taken the rights to *Manic Miner* with him, the same game has now been in the charts under two labels: old and new. This is a unique situation, and has been attended by angry comments from both sides.

"I know what Matthew's been saying, that he didn't get enough from *Manic Miner*," says Baden. "But I can tell you he got £50,000 cash from that one game while we sold it, and if that isn't

The first of all the 'PoolSoft houses has now recovered from the 'Manic Miner' affair, as they have from other affairs, and with Trevor Hall now spearheading their active teams, are continually developing new and high-quality software. At the time of writing, the *Computer Cook book* is being launched — an obvious way to get all those legendary housewives hooked. Imminent: *The Birds* and *The Bees* (not what you think), and now *Antics*, written by 17-year-old Adrian Sherwin. Bug-Byte have what they call MegaGames in the pipeline, chiefly *Star Trader*, which they call an 'ArcVenture'. They "might" support Enterprise and Amstrad ("Depends how they sell") and will "probably" support the QL.

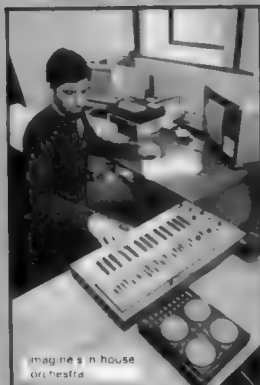
Bug-Byte's Joey: With three hands he'd be unstoppable!



Imagine Eugene Evans (at key), Mike Glover

ment of fast and expensive status symbols of the four-wheeled kind: an Aston; a BMW or two; the world-famous Lotus Esprit belonging to the scarcely less renowned Eugene Evans.

They also make very good computer games and earn a lot of money from them. Why the blue blazes shouldn't they do what they like with their dough? (I would.) So what if their Operations Director is, in his manner, a dead ringer for JR Ewing? Like the fictional oil-rich Texas executive, he gets things done and is not exactly (verbally) slow on the draw. In this he's like everybody you meet at Imagine. They all have total confidence in their corporate future; they feel they're going places.



Imagine's in-house orchestra

two, say, Evans and a junior hacker, each with a neat desk, a Sage IV, a couple of monitors and a Commodore 64. Many of the offices have glass walls.

## BIKER, THE RAT & JR

Today, as on many days, Mark Butler is dressed for biking: leather jacket, scarf, chunky boots, as is fellow-director Ian Hetherington, the only one of the Junta of four to refuse to appear on the TV cameras (Channel 4 are present, making a film). Operations Director Bruce Everiss wears (was probably born wearing) suit and tie. Dave Law-

son — according to Butler the man 'who made it all happen' — is small and neat and moustached like Kenneth Grahame's Water Rat, and speaks so quietly people lean in from either side to hear him talk.

During their TV interview these three, Lawson, Everiss and Butler, reinforce their company's image again and again —

Imagine don't see new Silicon Valleys springing up all over Merseyside. The latest of their run-ins with the Labour council has, it must be admitted, its farcical side. Apparently Imagine approached Derek Hatton and his Militant boys with a view to leasing the now-defunct revolving restaurant atop St George's Beacon, which is the 'Pool's



optimistic about the future, superconfident about their own fortunes, scathing about Liverpool City Council (you didn't hear this bit on TV).

Imagine don't get on too well with the Council, who, they say, positively discourage new investment; which is why

equivalent of the Post Office Tower. There were even plans, it is said, to display the Imagine logo from on high in the form of a giant neon sign.

The Council said, OK, give us a piece of the action and we'll oblige.

What, said Imagine. Do you mean a proportion of our company profits?

Too right, said the Council. A large portion.

Forget it, said Imagine. And they have.

Imagine's directors know they are not well liked within the Liverpool software ghetto. Nor do they give a toss, one gathers. They show no mercy and ask none. One of the more extraordinary of their actions took place shortly before this article was written, when the company not only bugged a senior employee they suspected of preparing to defect, but also actually released a transcript of an alleged treacherous conversation and published it as a broadsheet given away free with the normal monthly issue of a trade magazine. (The magazine owners caught on after 30,000 issues had been printed and pulled the plug.) The bugged employee has since left and now works for Software Projects — though Imagine itself, remember, was formed by former Bug-Byte men who also defected at a critical and (for the host company) highly inconvenient moment. It's not all fun and games and multi-coloured character sets, up there in Liverpool.

# TALES OF THE MANIC MINOR

AND THEN there was Software Projects.

This time the ancestry is even more muddled.

Matthew Smith. We know about. Then there was Alan Mason, former Danish Manager, who — you guessed it — Bug-Byte. And there was another executive, Colin Brown, who was working at the time for Imagine, former sire of Bug-Byte.

Mason was 'not too happy' at Bug-Byte at about this time last year, he remembers. Restless and — he felt — under-employed, he cast around for a new billet.

At the same time or slightly later Matthew Smith, a Bug-Byte (Danish) programmer, began to think himself under-valued, and also began feeling restless.

A businessman, slightly known to Mason, had a firm who was keen on the computer stuff. After a rather hazy discussion, in which Mason opened the man's eyes with visions of glory and dollars, the wealthy fellow offered Mason a partnership, which he at first refused, then accepted — on condition that Matthew Smith be made the third partner. Smith duly

departed, having been quit Bug-Byte (as usual in these cases, rather suddenly), and the following Monday, Software Projects was in existence, with an address in the pleasant middle-class suburb of Woolton, Paul McCartney's old manor.

In addition to bringing the rights to his game *Manic Miner* with him from Bug-Byte, Smith, after a lengthy delay, for final polishing, produced another masterpiece, *Jet Set Willy*, a fast and colourful game known above all for the bizarre quality of its colloquial objects. Its characters, showing (as good as you can get) have immediately established the third Liverpool software house as a rival to every sense to its legions. The company could hardly have enjoyed a better start.

Two months ago (at time of writing) the Trade (that's us, and them), had told 'You're needed with excitement' when Imagine introduced the script of an alleged phone conversation involving their employee Colin Stokes, a senior sales exec. It seems that, suspecting him of disloyalty, they had tapped his telephone.

To save everybody trouble

themselves included, we won't repeat the allegations made by both sides, but just record that Stokes departed Imagine forthwith, amid a sea of lawyers' letters, and within a couple of seconds, as it turned, had joined Software Projects.

Though none of the SP personnel actually live in Liverpool, Mason is ecstatic about the city, quoting, of all people, Carl Jung: 'Liverpool is the Pool of Life...'. He has nothing against any other company and remains a personal friend of Tony Mamer, co-founder of Bug-Byte.

The company is TRS-80 based, following Smith's own route into computers. (They actually use the big Model 3's.) Smith, according to Mason, is a brilliant but sometimes whimsical professional.

Because of the necessary lead time of artwork and packaging over the actual software, the game rules have to be written before the game is finished (assuming it is to be marketed as soon as possible). And Smith's habit of changing quite important aspects weeks at the last moment can put these rules out of date. Though Mason himself has been written in 12 weeks! 'Matthew came his intelligence wisely — he's a good all-rounder as well,' says Mason. Even before joining Bug-Byte, as it, Matthew Smith had been running his own company (with his mother as Managing Director), writing and selling small business packs for the TRS-80.

Those were the days. What comes next?





# the LLAMA has LANDED!

..... and it's breeding fast.

Once upon a time, only Commodore owners could experience the thrill of playing an original game by Jeff 'Awesome' Minter. Lesser mortals could only sit and stare in wondrous rapture at the furry arcade action brought to you by Llamasoft

**BUT NOW THERE IS HOPE.**

Dragon owners were the first to see the light of day, but now Salamander Software is pleased as punch to announce that selected titles **ARE NOW AVAILABLE FOR THE 48K SPECTRUM.**

Yes that's right, Salamander is now producing titles for the Spectrum, and the first of these are two great arcade games. ....

## METAGALACTIC LLAMAS BATTLE AT THE EDGE OF TIME

On a forlorn observation post at the edge of the galaxy, the Metallamas wait for a sign of Zzyaxian spaceships. Suddenly the alarm claxons blare, and the furry friends of freedom rush to the fore only to find that there are no attacking spaceships, and that they are under attack from Cyborg Arachnid Mutants and Disgusting Weevlroids.

This classic arcade game, originally developed by Jeff 'Awesome' Minter of Llamasoft, features 1 and 2 player options, spitting Llamas, Cyborg Arachnid Mutants, Disgusting Weevlroids, 99 levels of play. Joystick recommended. Supports Spectrum ZX Interface 2 and Kempston joysticks.

## MATRIX: GRIDRUNNER II

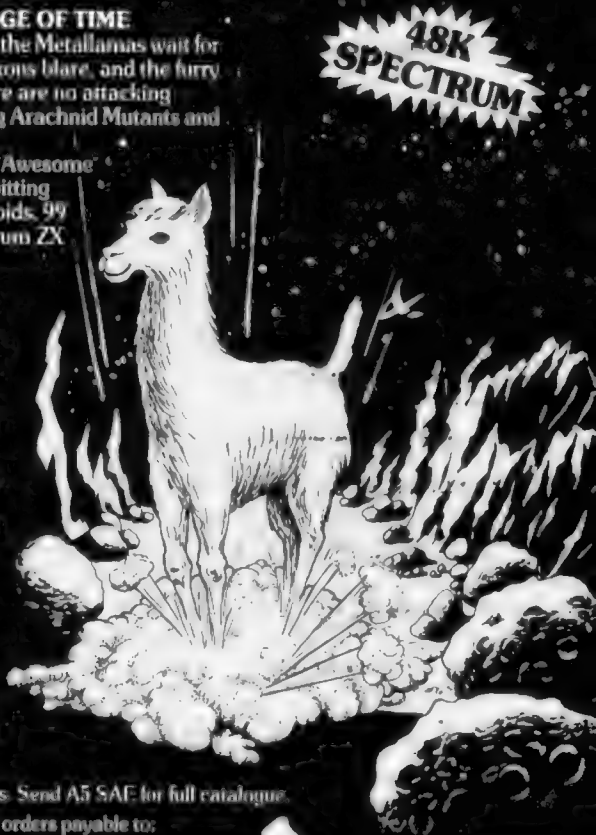
It is ten years after the infamous Grid Wars, and humanity is once again threatened by the evil droids, only this time they're back in force with new weapons and new allies.

The awesome sequel to the best selling Gridrunner, Matrix features all the old favourites like Droids and Zappers, but increases the panic quotient by adding Diagonal waves, Cosmic Cameloids, Energy deflexors, the Smitch and more.

Game originally developed by Jeff 'Awesome' Minter of Llamasoft. Joystick recommended. Supports Kempston and AGF joystick interfaces. In space, only the camels can hear you scream.

## What some famous people have said ...

"What's an arcade game	Aristotle
"Awesome"	Jeff Minter
"I prefer elephants"	Hannibal
"Don't shoot me, I'm only the piano player"	Elton John
"Boing"	Zebedee



Please add 50p P & P, to all orders. Send A5 SAE for full catalogue.

Cheques or postal orders payable to:

# Salamander

## SOFTWARE

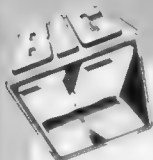
17 Norfolk Road, Brighton, BN1 3AA. Telephone: (0273) 771942.

**48K SPECTRUM TITLES** \*These titles available through Quicksilver Ltd.  
Metagalactic Llamas Battle at the Edge of Time £6.95 • Matrix £6.95 • Gridrunner £6.95 • Traxx £6.95 • Laser Zone £6.95

**DRAGON 32 TITLES** Gridrunner £7.95 • Laser Zone £7.95



SELECTED TITLES AVAILABLE FROM:  
John Mezzes  
**WHISMITH**  
Demos



HE WROTE ONE...

# MAN IN THE CROWD

LIKE HIS CONTEMPORARIES of the sixties, Liverpool-based Mike Singleton has turned his back on the Scouse House in favour of the bright lights of London-based Beyond Software. Through them he has unleashed his 'Epic' fantasy game *The Lords of Midnight*.

Mike has a dictionary. He has looked up the word epic "It describes crucial events in the history of a nation," he says. Well, that's part of it. In BIG K's dictionary it means something on a pretty large scale — and that just about sums up Mike's approach to writing computer games.

Mike started off in a 'small' way with *Starlord*, a play-by-mail game that just grew and grew. After the 500th player had joined the game Mike decided that it was time to give up his teaching job to concentrate on running *Starlord*, along with a few other projects he had in mind.

## CROWD SCENES

But like a Sir Richard Attenborough of the software world Mike is capable of things other than heavy crowd scenes. He's had his moments with the odd arcade style game or two. *Snake Pit*, *Shadowfax*, *3 Deep Space* (the one that made your eyes go funny) are all his. Now he's going for the Big One.

*The Lords of Midnight* is difficult to tag. Beyond Software seem overly fond of the term 'Epic' when describing it. More accurately it could be termed an interactive multi-player computer game utilising adventure and wargaming themes (mmm, maybe 'Epic' is a little shorter). It can be played as a traditional quest, a tactical wargame or a generally impressive trip through some advanced computer graphics.



Singleton by name but not by nature. MIKE SINGLETON, master of the multi-player game, is the man behind those enigmatic ads — "Who Are The Lords of Midnight?" RICHARD BURTON talks to another scion of the Liverpool software boom.

It is these graphics that are a key to the whole game. Mike has come up with a process he calls 'landscaping' which, every time you move, will redraw the landscape around you in proper perspective, making any changes necessary. As you move forward distant peaks will resolve into mountain ranges, with for-

ests and castles if need be. Lakes, frozen wastes, villages, citadels, armies and other elements can be added or taken away as required — all are random. Beyond claim a staggering total of 32,000 different locations for the game.

This is important because the player views the scene through the eyes of the main character, Luxor, and three others (as well as a possible 32 others, but that's another story). Each can be in a different part of the Land of Midnight thus giving an ever-changing number of viewpoints.

Game objective, very simply, is to defeat the evil Doomdark, played by the computer (gimme a hiss, gimme a boo). You are the hero, Luxor the Moonprince, Lord of the Free (gimme a yay, gimme a rah) and, by virtue of the Moon Ring, you can control other characters that

are loyal to you. You can move them through the realm of Midnight and see through their eyes. Some are individuals, some commanders of armies — you get the army thrown in.

There are two methods of offing Doomdark and his hordes: the wargaming method of sending armies to capture his citadel or the adventure method of sending one character off on a quest to locate the Ice Crown, source of Doomdark's power. You can tackle each of these separately or together to form the complete 'Epic' game.

*The Lords of Midnight* is a very complex interactive game which requires far more space than is available here to fully explore all its features — besides we're looking forward to giving it a full review very soon. So, you might think, such a game must've been some time in the making. Not so.

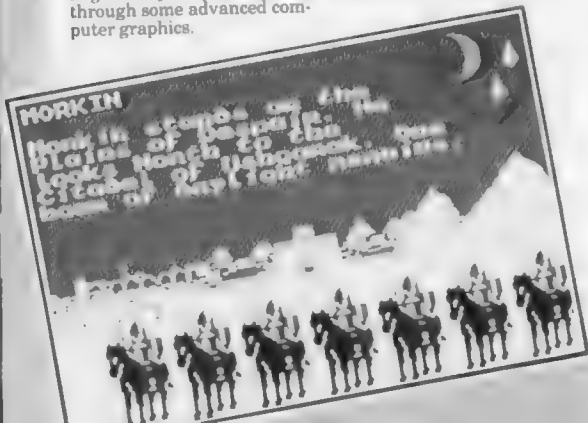
According to Mike it all began to come together towards the end of last year. Perfecting the 'landscaping' routine was the cornerstone of the project. In September Mike brought the idea to Beyond's Terry Pratt.

The next major steps were the establishment of the map of the Land of Midnight and the story which forms a prelude to the game, both of which appear in the game's manual. "I tried not to be influenced by Tolkien," said Mike, "but some aspects of his work were bound to creep in, as in most other fantasy-based games."

Work proper on the programming started only in January of this year and was 99 per cent complete within three months — not bad going when you consider how much has been packed in the Spectrum's memory.

Comparisons with 'super adventures' *The Hobbit* and *Valhalla* are bound to be drawn so BIG K anticipated the debate by asking Mike his thoughts on adventure games in general.

"I'm not really an adventure games player," he openly admitted. "I came into computer gaming through wargames. I find most adventure games to be 'closed', allowing only one possible route to completion. *The Lords of Midnight* is an 'open' game using intelligent play by the computer. Routes aren't dictated by the programmer in advance nor is all the scenery preplanned and locked into the computer's memory. You are in control of the main characters and their ultimate destiny."





# A fine day for tennis on your Spectrum

This is Wimbledon

The home of British tennis, enjoying Britain's fine weather

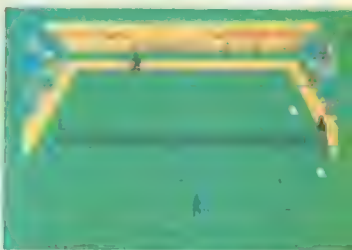
But this summer, things will be different. If rain stops play on court, you'll be able to carry on playing - with Sinclair's 'Match Point'

'Match Point' is one of six new, all-action programs for your Spectrum. It lets you play tennis against the computer, a friend, or just sit back and watch an exhibition match

Enjoy all the features of tennis - backhand and forehand shots, lobs, drop-shots, volleys, a scoreboard... even ball boys are on-call

But good tennis strokes aren't everything. To win the Match Point Open Championships you'll need skill and tactics

Luckily, though, you won't have to rely on the weather!



'Match Point' has been developed by Psion, one of the UK's top software houses

You'll find it alongside Sinclair's other new titles - Stop the Express, Bubble Buster, Zipper Flipper, Eric and the Floaters and Driller Tanks - in the shops, today

At £7.95, it's a real winner!

Selected Sinclair software lines are available from W.H. Smith computer stores, larger branches of Boots, John Menzies, Greens and most other software stockists nationwide

Sinclair Research Ltd, Camberley (0276) 685311

Sinclair, ZX and ZX Spectrum are Trade Marks of Sinclair Research Ltd

**sinclair**

A

**POWER**  
LBC MODEL B  
**GHOULS**



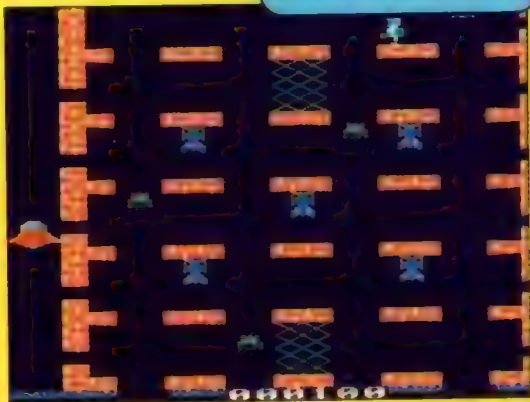
Glenn's 1956 Soft is a 100-foot-long meadow and grass bank to his left. The soft, fuzzy texture of the leaves is almost like velvet. Spores, insect eggs, and bits of old cat hair are scattered in the air, and the grass is so soft you can't see the plants under it. A few S. are dotted here and there, but the ground is almost entirely a soft, fuzzy mass from the leaves making it. There are a few rocks in it and some other plants with the leaves, but the texture is soft and fuzzy all over. The grass is so soft you can't see the plants under it. The grass is so soft you can't see the plants under it. The grass is so soft you can't see the plants under it.

As a graduate, I have been fully  
impressed and am able to  
do the job of a graduate. KA

**Game:** GHOULS  
**Maker:** MICRO POWER  
**Machine:** BBC  
**Format:** cassette  
**Price:** £7.95  
**Rating:** KKK



STEVE KEATON  
NICKY KIKLUNA  
TREVOR SPALL  
KIM ALDIS  
TONY TYLER  
RICHARD BURTON  
RICHARD COOK



# This Jack's Alright

Nasty doesn't even begin to describe *Jet Power Jack*. Only an hour at the keys and I was reduced to a slobbering wreck who had to be physically restrained from putting a boot through the screen. It's one of those games where you control a little man with a jet pack. Poor old Jack has been caught by Nogrob the Terrible and unceremoniously dumped in a space garage.

You have controls for left, right and thrust to go up and you manoeuvre him around, avoiding the ever vigilant Space Googlies, picking up fuel pods to take back to his spaceship. Sounds easy? Not a bit of it. The walls are all electrified and touching them means instant incineration. You also have very little room to move around and this makes it an absolute nightmare. I spent hours smashing the unfortunate Jack into walls until I finally gave up.

Unless you're a hardened games freak, used to scores like telephone numbers then keep a strait-jacket handy — **K.A.**  
**Game:** JET POWER JACK  
**Maker:** PROGRAM POWER  
**Machine:** BBC  
**Format:** cassette  
**Price:** £7.95  
**Rating:** KK



Whoever invented *Troopa Truck* should be put in a truck of his own design, taken out into the desert, and dumped. Never has a game infuriated so much by so few attempts to play it.

Let's start with the action. You are a truck. Like in the popular arcade games you have to move across the screen, blastin' boulders and jumpin' over any obstacles in your path. You are also played by airborne craft which must be eliminated before they blow holes in your way. It quickly became apparent to me that if I held down the fire button continuously, I could simultaneously eliminate the boulders and the flying craft. So there I lurked, never using any speed so that I could see what was coming. That's it. You carry on, sweaty mitt on button, until you get zapped, which you always do. For some obstacles are simply insurmountable. So you fall victim and the performance starts all over again.

**Good points:** When the truck is destroyed, the chassis collapses and sinks to the ground. The wheels fall off and scatter, making a rippling good 'churning-scrunch' sound. The truck noise itself is really great — sounds just like the brisk clip-clop of a horse. (Though Thrang knows why a truck wants to sound like a horse.)

All this joy crystallises against a background as eye-catching as a plate full of mud. Flat layers of colour form a landscape designed by a kindergarden impressionist. If I could spell what a raspberry sounds like, I'd blow one here. — N.X.

**Game:** TROOPA TRUCK **Format:** cassette  
**Maker:** RABBIT **Price:** £5.99  
**Machine:** COMMODORE 64 **Rating:** K



ACORN SOFTWARE GAMES

DISC

40 80

DUAL FORMAT

# Crazy Tracer

for the BBC Microcomputer Model B



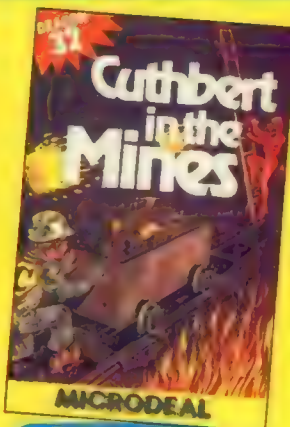
Acorn can usually be relied on to produce good versions of classic games and this is no exception. Crazy Tracer is a copy of the excellent Painter.

You have to guide a paint roller around squares while avoiding monsters intent on flattening the roller. There are two difficulty levels which alternate with each other. On the first you have to trace round each square which lies in when completely surrounded. The second is more difficult. You can only fill squares adjacent to lines already filled. If you change direction or move away from the square the roller runs out of paint and you have to go back to a completed square for a refill.

Extra lives are awarded for every 10,000 points scored and you can make the monsters jump if you get caught in a desperate situation. You also get bonus points for filling squares containing fruit.

Crazy Tracer has all the addictive qualities of games like Pac-Man. Basically simple and yet totally absorbing. — K.A.

**Game:** Crazy Tracer  
**Maker:** Acorn  
**Machine:** BBC  
**Format:** Disc  
**Price:** £12.95  
**Rating:** 4



MICRODEAL

MAKE  
MINE  
CUTHBERT

The continuing saga of Cuthbert reveals Microdeal's hero/victim to be trapped underground, his ambition (and, of course, yours) being to reach the surface. Cuthbert needs to jump up five levels along which trundle sets of trucks as obstacles to be avoided. Cuthbert must jump into the gaps if he is not to be knocked down to the level below. The bottom of the screen is a fiery pit which means the end of Cuthbert should he fall too far. To complicate matters a demon patrols a ladder spitting fiery death should he spot Cuthbert on a level.

Cuthbert has four 'lives' ('we can rebuild him, we have the technology') and you can use either the joystick or the arrow keys to guide to the single surface exit. Eight escapes means promotion to the next screen. There are five of these, ranging from 'easy' to 'impossible'. You can select which screen to start at, a feature which I feel should be the norm rather than the exception.

The graphics are good with Cuthbert response is quick and all the game sound have been well thought out an executed. Presentation includes a demonstration mode and a high score table is provided for those of you who are good enough to get on it. All in all, a thoroughly addictive fun game.

One minor (had to get it in) niggle: why does the documentation entitle the program 'Cuthbert in the Mines' when the title page on-screen declares 'Cuthbert in the Mine'? Does Microdeal know something about NCB policy that we don't? — T.S.

**Game:** CUTHBERT IN THE MINES  
**Maker:** MICRODEAL  
**Machine:** DRAGON 32  
**Format:** cassette  
**Price:** £8.00  
**Rating:** KK

# FLAP, FLAP, SPLAT!

Flying Feathers is an X-rated game for animal lovers. Imagine: it's a beautiful summer's day. You sit in a rustic rowing boat on a calm lake. Distant fields can be viewed, stretching out like Mother Goose's patchwork quilt over the horizon. Suddenly, the brilliant blue sky fills with birds. So you shoot them. Flap, flap, splat!

But you're only doing your job. You're a game warden with a shotgun, and you gotta git them critters afore they swoops down an' gits yur fish.

A solidly-crafted, addictive game this. Very attractive hi-res graphics. A madly quacking duck bolts across the lake if you manage to acquire a bonus fish. There's even a theme tune that I actually hadn't heard before — not just another well worn music-hall favourite. Well worth a thrash — but strictly not for the birds. — N.X.

**Game:** FLYING FEATHERS  
**Maker:** BUBBLE BUS  
**Machine:** COMMODORE 64  
**Format:** cassette  
**Price:** £6.99  
**Rating:** KK

# Down with the Peasants!

Barony of Maelin is a game where you are a knight in a medieval world. You have to fight peasants and other enemies. The game is very addictive and has a high score table. The graphics are good and the sound is well done. The game is very easy to play and is suitable for all ages. The price is £12.95. The rating is 4.

## BARONY OF Maelin

FOOD/MONEY  
LAND  
MERCENARIES  
ARMED WITH  
WORKERS

1665 DUBLOON/BUSH  
90 ACRES  
9  
SPEARS  
51

DO YOU WISH TO BUY OR SELL LAND  
EACH ACRE IS WORTH 12 DUBLOONS

**Game:** BARONY  
**Maker:** PHANTOM  
**Machine:** ATARI 2600

**Format:** cassette  
**Price:** £12.95  
**Rating:** 4



# GREAT GAME, BUT...

Jet Set Willy arrived at the BIG K office late, thanks a bunch. SP: the prerogative you might say of the micro scene's cosmic megastar. However, this put me in the unenviable task of trying to review a game that, as I write, is already Number One (with a bullet) in most of the game charts. I guess that neatly disposes of the questions, will you like it and will it be a success!

So, for the few who've recently returned from swan-upping in darkest Belgium, here we have the second appearance of Miner Willy, fresh from his starring role in the Bug-Byte/Software Projects mega-hit *Manic Miner*.

Willy makes his elegant reappearance on the cover of *Jet Set Willy*, head down the lavin graffiti-covered bathroom (tasteful! SP: his non-NCB approved wellies akimbo). The premise, it seems, is that Willy has become so stinking rich from the fortune he discovered in *Manic Miner* that he has bought himself a huge mansion and thrown the mother of all parties.

The party's over and Willy wants to crawl into bed (and die!) but his housekeeper insists he collect

every glass and bottle left in the mansion before he can do so.

The stage is set for Willy to take off on another sojourn through the strange mind of Matthew Smith as each room he enters (and there are around 60!) is some incredible carnival of moving things, hazards and rewards. In this respect it's identical to *Manic Miner*. All you have to do is keep Willy moving and try to jump over any traps or dangers. Use up all his lives and it's The Foot (uncle) this time! for you, my lad.

The major disappointment for me was the lack of demo mode. SP claim *Jet Set Willy* is a "Total Graphics Adventure" (say what?) and are offering a Big Prize to the first person who cracks it. All well and good, but at least no-hoppers like myself who can only manage about half a dozen screens had the chance of seeing the full range of Matthew Smith's lunacy on MM. Any kind soul out there want to tell me what I'm missing?

That said, *Jet Set Willy* is a worthy successor to *Manic Miner*. The graphics, animation and sound are as good as, if not better than the original! Mania,

the housekeeper, in particular, is superbly characterised. The way she taps her foot as Willy approaches his bed and then points an accusing finger towards the mess he has to clear up is brilliant.

Okay, compliments out of the way — let's talk about the security system on *Jet Set Willy*.

Software companies are of course going to fight the serious piracy problem in any way they can and I support them in the fight, but the hare-brained system in use on JSW isn't going to help anyone!

A small, many-sized card containing 180 different 4-colour combinations comes with each copy of JSW. Once loaded the program asks for the particular combination at column x, row y on the card. The user then has to search out that combination

and key it in. You only get two attempts before the program wipes itself! There's no way you can erase a mistake.

The system fails on two levels. First, the card is too small and the print quality so bad that it's difficult to distinguish between a red and a magenta even if you have good eyesight. Secondly, the system takes no account of people who are colour blind or who may be playing on black and white sets.

The system is a hindrance and, I'm sure, will discourage people playing JSW as often as they really like. A shame that a program of this quality and popularity should inhibit the majority of honest, law-abiding hackers on account of the actions of the minority of trouble-makers.

Think again. SP — RB



**Game:** JET SET WILLY  
**Maker:** SOFTWARE PROJECTS  
**Machine:** SPECTRUM 48K  
**Format:** cassette  
**Price:** £5.95  
**Rating:** KKK

## Too Late... Too Pricey!

LIKE A GUEST late for his own party *Pac-Man* finally arrives on the Spectrum scene.

Yes, folks, the genuine, fully authorised, accept-no-fakes, original Ghost Gobbler is here. Purists who have been holding out against the hordes of Pac-Clones, this is it!

The best compliment that can be paid to AtariSoft's Spectrum edition of *Pac-Man* is that it is an extremely faithful reproduction of the original arcade barnstormer. All the ingredients that made the game a classic (ghosts, power pills, fruit, etc.) are rendered in easily recognisable graphics form.

In fact about the only thing that shows up the Spectrum's limitations is some rough animation. Sound, however, is very good and manages to retain the characteristic 'wacks wacks' sound of the game.

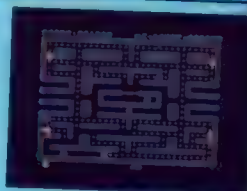
A high score table, attract mode, keyboard/joystick options and a cute 'interlude' after each two screens round off a generally high quality presentation — which is to be expected of an Atari product.

The big problem of course is

that *Pac-Man* has already been done to death. Atari have attempted to close the proverbial stable door with the horse cold in its grave.

Even those who haven't already got some form of the ghost chomping game in their collections will be hard put to cough up nearly £15 for this cassette-based edition. Atari seem to be blind to the realities of the software marketplace in this country. Someone had better perform some laser surgery on their corporate optic nerve before lack of foresight condemns this particular game to some dusty shelf in a Hall of Fame somewhere. — R.B.

**Game:** PAC-MAN  
**Maker:** ATARI-SOFT  
**Machine:** SPECTRUM  
**Format:** cassette  
**Price:** £14.99  
**Rating:** KKK



## Pitching and Punching

**K** = Could Be Better  
**KK** = Could Be Worse  
**KKK** = Unsurpassable

## VLADS AND VLASSIES

THERE are FATES WORSE than DEATH!!! yells the cassette insert "WARNING: We strongly recommend this game be played with the lights on," admonish the instructions sternly. This allegedly "Spine chilling Adventure game for the BBC micro," is in fact a bit of a mess. It starts off okay with a "music while you wait" interrupt loader playing organ tunes as the bulk of the program loads, and even the odd bouncing skull, but once you hit the adventure the program's true nature is — gasp! — at last revealed. The language parser is awful, accepting extremely limited two-word commands. Ygor also puts in an appearance (a "mythsake"?). I couldn't find any graphics worth mentioning, although some sound effects were pretty neat. I should add Worst of all was the "smart" responses to unparsed or mis-spelt input. After the twentieth time, these become a little how shall I put it? worn? The program is very long, but I can't help feeling had it contained less rooms and more graphics/sound it would have been tons better. Perhaps next time, Micrograf. — A.G.

**Game:** VAMPIRE CASTLE  
**Maker:** MICROGRAF  
**Machine:** BBC B

**Format:** cassette  
**Price:** £7.95  
**Rating:** K

## Woodman! Save that Tree!

Woodland Terror is a text-only adventure for the Beeb. The action takes place in Mode 7, and heavy use is made of the teletext features: colour, flashing and double height.

As it's written in machine code, the delay between commands and action isn't noticeable. The lexical analyser (word processing routine) is an adequate verb-noun job, like GO WEST... GET BRICK, but nonetheless the texture descriptions give the game some charm and charisma. The text is compressed, allowing a

much larger and complex game than with usual methods (Acornsoft's adventure series, for example). The instructions are adequate, and my only real beef is that the scenario is a little — uh — traditional. Genie enslaves local inhabitants... hero called upon to release "the unhappy land" from tyranny!!!

However, it's a tight and neat adventure... well worth checking out. — A.G.  
**Game:** WOODLAND TERROR  
**Maker:** MP SOFTWARE  
**Machine:** BBC B  
**Format:** cassette  
**Price:** £7.48  
**Rating:** KK



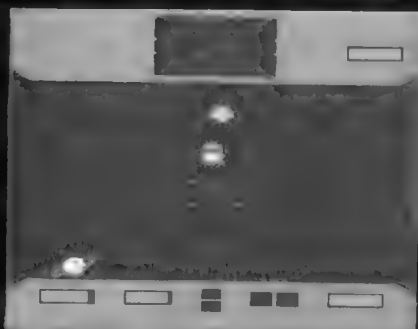
## BEEF

I have a beef with Cybotron. I may not always smite my sprites like a sprout out of Hell, but this time I'm bringing the blame solidly on the game. Allow me to explain. The world has been taken over by robots who are intent on eliminating all mankind. It's your task to kill the robots before they kill you. But here lies a problem, for as soon as you make our screen debut you are surrounded by robots. As you can only fire in the direction of travel, it is impossible to survive for very long. I thought that what seemed like an eternity to begin with. Then to cap it all, I had to deal with "Fred's rules" written at the top of the starting screen.

So, while the graphics were fairly handsome, and the sound was as sweet as the sound of a can being opened by human teeth. — N.X.

**Game:** CYBOTRON  
**Maker:** ANIROG  
**Machine:** COMMODORE 64  
**Format:** cassette  
**Price:** £7.95  
**Rating:** K

## Raiders of the Lost Cylon



A 3D space battle. A "n" Fire pushing definitions a bit to call this game "3D", but they've got the space battle off to a T. Done in mode 5, the game is fairly colourful and very fast.

From a Star Trek-like main display that scrolls in two dimensions you've got to zonk the nasties by aligning them against stationary cross-hairs. This process is slightly confounded by the fact that the nasties are hurtling towards you! They appear to be suicidal (perhaps on account of so many lost relatives in Space Invaders) and unless you hit them first, they'll plough right into you. If you get too damaged, you can dock with your yellow mother-ship. You've only limited shield energy and fuel, and the lasers have to have time to recuperate after every few shots. The animation is pretty good, except on the title sequence.

As you turn and accelerate, stars and other stellar debris (you know: an occasional Tardis, the odd binary star) fly past the main viewport, giving the game a good feel. Level one is manageable, but level two is impossible. — A.G.

**Game:** CYLON ATTACK  
**Maker:** A&F  
**Machine:** BBC B

**Format:** cassette  
**Price:** £7.90  
**Rating:** KK

## KISS ME, HARDY

TRAFALGAR — a simulation of the great naval battle. Cannonballs smash into hulls and tear holes in sails. Magazines explode. (Others just lose circulation.) Ships sink. Flags are struck and prizes taken. Ah-ha.

Two opposing lines of ships face up to each other. You select which ship to do battle from, and a "close up" is displayed, side on, of your and the enemy's ship. You then proceed to try and paste the other guy by firing cannonballs at him. Queensbury Rules apparently apply, however, as you have to take turns to zonk each other. "The other guy" can either be the computer or another human.

You give the elevation of the cannons, after taking the windage into account, and let fly. If you hit, pixels fry. This is fun for the first twenty shots, but then terminal monotony sets in. It's written in Basic, and I'm afraid I detected an unacceptable amount of windage coming from this program. — A.G.

**Game:** TRAFALGAR  
**Maker:** SQUIRREL  
**Software:** SOFTWARE  
**Machine:** BBC B

**Format:** cassette  
**Price:** £8.00  
**Rating:** K

## HOMEWORK

The animation becomes quite good on stage two, when asteroids nuzzle...

So, graphically, stunning and fast, but not enough work on the game-plan. — A.G.

control:

So, graphically, stunning and fast, but not enough work on the game-plan. — A.G.



## The Orbiter Arbiter



A flight simulator on the Atari VCS? C'mon, you've got to be kidding! Nope, no joke this. Not only a flight simulator but the ultimate simulator — the Space Shuttle.

Incredibly Activision in general and Steve Kitchen in particular have managed to squeeze a full Space Shuttle mission into a video game system with less memory than your average brick. A magnificent effort that has worked.

You are in control of the 101st Shuttle mission (suitably far enough in the future to aid suspension of disbelief). Your brief is to blast off from Cape Canaveral, go into orbit and rendezvous with a satellite as many times as possible on the fuel you have, then go through re-entry and land your craft at Edwards Air Force Base in California. Simple, huh? Hah!

There's the small matter of digesting a superbly technical 32-page flight manual; familiarising yourself with about a dozen different on-screen displays and around 25 'Stat' message codes.

Then there are the controls. Every switch on the VCS console has a function (often two) from starting the countdown to opening and closing the cargo bay doors. An extremely useful overlay and 'crib sheet' is supplied which are tailored to fit the Atari console. Even the joystick has to cope with keeping the Shuttle on course in three axes as well as handling thrust and direction.

The screen displays a forward view through two of the Shuttle's windows. The limited graphics of the VCS are put to good use with convincing shots of space and the blue-green curvature of Earth rotating below. You really have to search for the satellite you are to rendezvous with but are rewarded with by a realistic rendering of it when eventually located.

Below the 'windows' are two horizontal thrust indicators and below those is the main display screen on which all flight conditions are monitored. The amount of information displayed in this small area is truly staggering and requires your full concentration.

So, once you have mastered all the above you can take on a mission or two. A safe return to base will earn you a ranking dependent on the number of dockings you've achieved and minimum fuel units used.

Now I'd be the first to admit that I've never actually flown in the Shuttle II have this allergy to excessive vacuum and absolute zero) but I imagine that this 1.5m comes pretty close to the real McCoy. As a computer 1.5m Space Shuttle is excellent; as a VCS 1.5m it is truly outstanding. I'm looking forward to discovering a lot more about it on future missions. —S.B.

**Game:** SPACE SHUTTLE  
**Maker:** ACTIVISION  
**Machine:** Atari 2600 VCS.

**Format:** ROM  
**Price:** £29.95  
**Rating:** KKK

## SENTENCED TO HARD LABOUR

Eureka! I know just what *The Sorcerer's Apprentice* felt like after all that wandage! He had a piteously sore wrist just like mine own after persevering through this meretricious game. I carried on in a vain search for the clues needed to take on the adventure game that is a sibling cassette in this duo pack.

For those that knoweth not the olde tale, it goeth thusly: Whilst Merlin is out, his lazy apprentice uses magic to cheat on his cleaning chores. Merlin's spells go awry in the hands of the lad, and an uncontrollable army of living brooms drown Merlin's tasty gaff with dishwater.

Let me describe the 'action'. On yer left, brooms approach carrying pails of water towards screen right; a crudely-drawn vertical wall which is your dam. To win: protect your dam. The brooms will fill it with water and drown you, the brooms nick your bricks. To stop them, you simply stand in their way.

Nowhere near magical, alas — and outstanding only in that it's the nearest game-play gets to hard manual labour. The design is drab, the graphics are dull and indistinct, sound is partly naff — the same few notes from the film-thusic repeated ad wotsit. Its incentive rating is zilch. —N.X.

**Game:** THE SORCERER'S APPRENTICE  
**Maker:** PHOENIX  
**Machine:** COMMODORE 64

**Format:** cassette  
**Price:** £6.99  
**Rating:** none

## SALTY SEADOG

Those despairing over the dearth of decent software for the unexpanded, underpowered VIC would do well to check out this salty seadog from Cap'n Micro. In it you must sail a beleaguered battleship through a positive storm of oceanic hostility. Schools of missile-belching subs and low flying bombers do their best to scupper your tub and only some spirited manoeuvring will keep you afloat. It's no good relying on the ship's depth charges as you've only a score to lose.

**Game:** INVINCIBLE  
**Maker:** MR MICRO  
**Machine:** VIC 90

Three speed levels add a bit of variety and the graphics are neat 'n' tidy. I quickly gravitated towards the fastest level — not, I hasten to add, because I was much cop, but because I found the wildly whizzing boat to be exceptionally comical. The thing would battle back and forth, totally out of control, spewing tiny black depth charges and promptly exploding at the first enemy salvo.

The scores were as low as my grin was toothy. —S.K.

**Format:** cassette  
**Price:** £9.90  
**Rating:** KK



## YOU SAY TOMAYTO

I haven't seen a short young dude in weeks. But I keep right on looking. There's nothing else to do. Then suddenly I spot one! The little critter starts at the sound of my armoured Vecktraker and legs it into the maze. I cram on the gas. The mug scuttles away — only to find itself cornered in a dead end. It's bulbous eyes spin like hubcaps and it rasps in defiance. With a grin I punch the Electron Interrogator. ...

Visually at least this SF maze chase is pretty impressive. Each maze, or sector, to use the vernacular, contains a family of Scarabags which, when confronted, are revealed to be nothing more than lovely, bug-eyed imagines. Your task is to try these fruits and the maze on to a new sector.

Unfortunately, despite the sharp visuals the gameplay is a little monotonous. Still, those fancying a short bout of tomato trashing will not be disappointed. —S.K.

**Game:** ZIGZAG  
**Maker:** DR THOMAS  
**Machine:** SPECTRUM 48K  
**Format:** cassette  
**Price:** £6.95  
**Rating:** KK

## BUCK ROGERS and the PLANET OF BLAH



Disappointing translation of an old game for the Commodore Adam, it comes in the form of Coleco's Nightmare. Basically, it's your actual life all over again, along which Blah lies. Well, he doesn't actually fly, more or stagger — while the usual crew of 800 men in a bop around in front of him. On his way through this money and deadly commencing crew of interstellar types. Buck then leads himself in a Now Group Saturn-like planets and then and finally lay in strings. Axel those with the usual tombakul plating. I move in into screen three, the perfect planet damed with strange duplex tow.

I mean, like, this is boring, you know it this way. For a debut game on an End New System On Which Unnamed is Best etc., it's a sorry and then to. Although the actual Buekship an smoothly through, the trench itself by the line one of those optical devices pressed to make you travel sick, while objects, planes, towers and so on also (Nem's the world) through the grid written in BASIC. Put it another way: they slapped Planet Of Zoom together, got who wrote Zaxxon was out to be. Literally. —T.Y.

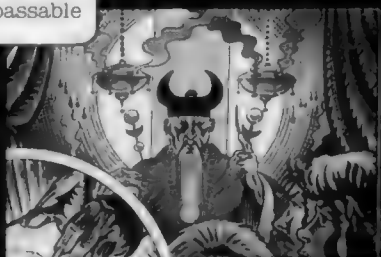
**Game:** BUCK ROGERS & THE PLANET OF ZOOM  
**Maker:** COLECO  
**Machine:** COLECO ADAM  
**Format:** Coleco cassette  
**Price:** £14.95 (supplied with Adam computer)  
**Rating:** none

K  
KK  
KKK

Could Be Better  
Could Be Worse  
Unsurpassable

COMPUTER

## TAO GOES HIGH-TECH



THE I CHING is an ancient method of divination formulated by the very Chinese more than four thousand years ago. Puzzled orientals would consult the oracle seeking guidance or reassurance throughout their life-spanned lives. It was a source of great revelation. And now Tao has gone hi-tech with this release of the novel program from Virgin. You too will be able to delve into the mystical world of oriental philosophy!

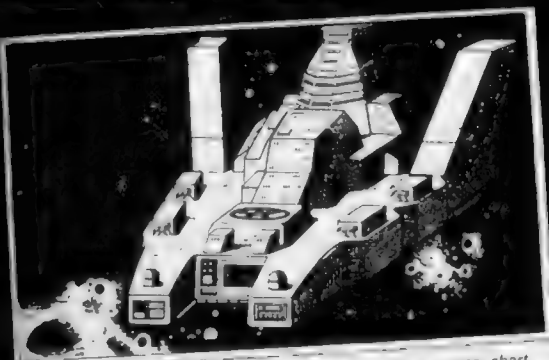
The I Ching itself is composed of sixty-four individual hexagrams, each one accompanied by an appropriate text. Upon loading you'll be able to construct this hexagram using the space bar. It's important that you bear in mind your question to the oracle as you do this, as an accurate answer will raise a sword on the tip of the High Ching.

Once complete the hexagram is entered into the system and a message appears. Enlightenment is yours! Apparently based on the original works of the King Wang, the text is couched in a wonderful esoteric mystic rhetoric that's guaranteed to raise a shudder. "The superior man gives careful thought to criminal cases and hesitates before trying to free their puny." "It deviates, before adding... rather ominously..." "In the eighth month there will be evil!"

I find it hard to believe that anyone might take this at all seriously, but for consulting's sake it's hard to beat. To be loaded with tongue-in-cheek, grasshopper! — S.K.

Game: I CHING  
Maker: VIRGIN GAMES  
Machine: DRAGON 32

Format: Cassette  
Price: £10.95  
Rating: KK

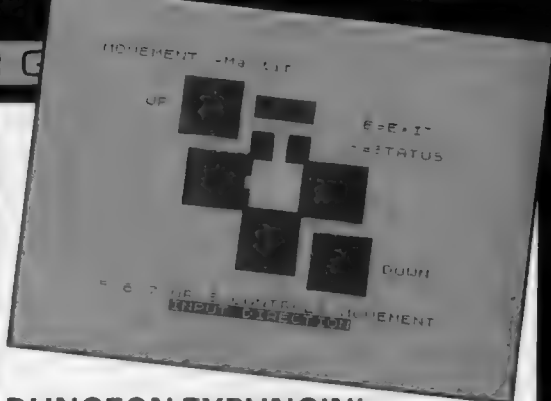


Adequate implementation of the standard Star Trek game. As commander of the USS Endeavor it's your mission to go boldly where absolutely loads of people have gone before and eradicate the dreaded Krugon menace from the galaxy. Krugons are, of course, a filthy alien type not entirely dissimilar to Klingons. You begin each mission with a rather meagre complement of twenty photon torpedoes, limited phasers and a full tank of gas (gas?) These can all be replenished by docking with one of numerous Starbases throughout the game. All the complexities required of a Star Trek program have been included. There are energy levels to juggle with, shields to wield, warp speeds to watch and scanners to scan with. Thankfully the screen display is both clear and comprehensive. Along with all the various status

reports you get a space chart which shows your position in regards to other quadrants and a local scanner which monitors the current areas of play. Animation on this is rather jerky and unimpressive.

Needless to say there's a lot to consider and much patience is required. I just couldn't cope at all. Docking the damn thing was next to impossible. Inevitably I would thoughtfully into the side of an unsuspecting Starbase. It's a pity that I wasn't meant to be totalling them instead of Krugons. My ratings might have been more impressive. — S.K.

Game: SPACE FIGHTER  
Maker: MICRODEAL  
Machine: DRAGON 32  
Format: cassette  
Price: £8.00  
Rating: KK



## DUNGEON EXPUNGIN'

Labyrinths full of beasts are all too familiar fare in adventure games, and Temptation's shot at this D&D development offers no fresh view on a rapidly tiring format.

The most basic of graphics plot a colourless course through two choices of maze, both the usual quota of basilisks, hobgoblins, etc. Nothing so exciting as seeing these creatures onscreen, of course — a presence in words only, with a choice of attacking (and you nearly always win) or retreating.

All you have to do is find a way out and collect treasure en route. Small sections of the floorpan are revealed to you as you go.

Not especially simple, I guess, but there's no thrill of escape, no tease in tracking out the solution. Sound is at a premium with the cursor keys offering a bare bleep for movement.

When there's a games like Dragonslayer or Atic Atac around, nobody's going to be much bothered with such a bloodless quest — R.C.

Game: DUNGEONS OF DOOM  
Maker: TEMPTATION  
Machine: SPECTRUM 486  
Format: cassette  
Price: \$5.95  
Rating: K

## OUTBACK

### HOW TO ROO THE DAY



In OUTBACK I was 'Big Ron', a mega kangaroo who had to protect a nest of bigo kangaroos from being bagged by away men. In the first stages of the game the swaggers drop from balloons. The next swarm are dropped from parachutes, and the final wave pop out of the hillsides.

I valiantly defended my young 'uns, but found my movements infuriatingly limited. I was confined to bounding up and down at one side of the screen, taking pot shots. Also there was a crucial spot just before the blaggers landed where my shots had no effect for no apparent reason.

The graphics were very cutesy, and the squeals uttered by the young kangaroos when bagged were almost heart-rending. However, this game did not turn my crank. It did not catch me in that fatal combination of challenge and frustration that prevents you from putting a game down. This kangaroo didn't tie me down, sport. — N.X.

Game: OUTBACK  
Maker: PARAMOUNT SOFTWARE  
Machine: COMMODORE 64

Format: cassette  
Price: \$7.50  
Rating: K

## Software Specialist

# Golden's

## of London Bridge

**The best in Colour Graphics, in Black & White!**

## COMMODORE 64



RE 64			
		Maver Bowler	\$8.50
		Hunter Camels	\$6.50
		Beverage Camels	\$6.50
		Gridiron Camels	\$4.00
		Hungry Morals	\$4.99
		Armageddon 64	\$12.99
		Rollball	\$5.96
		Chinese Juggler	\$5.96
		Mr. Wimp	\$5.96
		Hunchback	\$5.96
		Meribellie	\$5.96
		Decislops	\$5.96
		Kristal/Zong	\$6.99
		Acquaplane	\$6.99
		Purple Turtles	\$6.99
		Ring of Power	\$8.99
		Ulfyngh	\$6.99
		Bugaboo	\$6.99
		Using 64	\$6.99
		Trans. Topper	\$6.99
		Ship of Line	\$5.99
		Everest	\$5.99
		64 On 64	\$5.99
		Light 'n'	\$6.99
		Minic Miner	\$6.00
		Crazy Balloons	\$6.00
		Beisged	\$6.00
		Just A Mol	\$8.99
		Time Traveler	\$8.99
		Word Power	\$7.99
		Uf Llooper	\$7.99
		819	\$8.99
		Jemini	\$5.99
		Super Pipelanes	\$5.99
		anme 64	\$5.99
G. Master Chess	\$15.99		
Estimerator	\$5.99		
819	\$5.99		
Rick Off	\$5.99		
Widows Revenge	\$5.99		
Using Valley	\$5.99		
Dicator	\$5.99		
I D Tans	\$5.99		
Over the Top	\$5.99		
Quert Heid	\$5.99		
Fabulous Wanda	\$6.99		
819	\$6.99		
Frogger	\$6.99		
Rary Kong	\$6.99		
819	\$6.99		
Cuddly Q Bert	\$6.00		
Defender 64	\$6.00		
819	\$6.00		
Tokens Of Challa	\$6.00		
Vortex Raiders	\$6.00		
Heroes of Rain	\$6.00		
Assembler 64	\$6.00		
China Miner	\$6.00		
Arctide 64	\$6.00		
Lords of Time	\$6.00		
Knobball	\$6.00		
Colonial Ady	\$6.00		
Mattis	\$6.00		

# ZX-SPECTRUM

[illegible]

# ATARI

[illegible]

# BBC Model B

Cylon Attack	£9.90	<b>admission prices</b>	
Chuchie Egg	£6.50	<b>Contributions</b>	
Bugblaster	£6.95	<b>to Dispers</b>	
Twinn Kidom V	£8.50		
Dictator	£9.95		
747 Simulation	£6.95		
German Air B	£8.95		
French Miss A	£8.95		
French Miss B	£8.95		
Colonial Adv	£8.90		
Snowball	£8.90		
Lords Of Time	£8.50		
Q Man	£4.90		
Man In The Hat	£4.90		
IdJ Marches	£6.95	Apocalypse	£8.95
IdJ Space	£8.95	Mist	£8.95
Doglight	£8.95	Transistor Rev	£6.95
Saloon Sally	£9.99	Garfield	£6.95
VU Calc	£13.95	Trome Traveller	£8.95
VU Film	£13.95	Seasage	£8.95
Music Pract	£13.95	Just A Mat	£8.95
Beeb Art	£13.95	Hunchback	£8.95

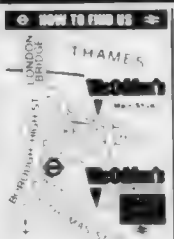
## QUICKSHOT JOYSTICKS

	Quickshot I	Quickshot II
Commodore/Atari.....	£10.95	£12.95
Spectrum with Interface.....	£19.95	£21.95
BBC with Interface.....	£22.95	£24.95

IF YOU CAN'T SEE THE PROGRAM YOU WANT PLEASE PHONE , WE MAY HAVE IT IN STOCK



There's MORE at historic, picturesque London Bridge Walk than Vic Odden's friendly service, wonderful prices, wide choice and staff so expert they possess disk drives for brains. NOW there's a FREE TAPE with every software cassette purchased before June 31st. Store your favourite programs courtesy of Vic Odden! (But remember, this offer is only valid on production of this advert)



Access Visa, Trustcard & Creditcharge orders can be accepted by post or by telephone on 01-403 1988, during normal working hours. There is no surcharge on any credit

ALL MAIL ORDERS to  
6 London Bridge Walk,  
London SE1 2SX

**INSTANT  
CREDIT  
UP TO  
£1000**

**Want to update your hardware? We'll give you up to £1,000 Instant Credit, plus Part Exchange. Just call or write for details.**

**VicOdden's MAIL ORDER SERVICE**

All mail order & phone enquiries to 6 London Bridge Walk 403 1985

Name .....  
Address .....

Mail Order **POST FREE!**

Prices correct at time of going to press E&OE All offers subject to availability



**£5.95**



**Thor**  
Games from the Gods

A movie poster for the film "Gremlins". The title "gremlins" is written in a stylized, white, cursive font across the top. Below the title, a bright, glowing blue light source, possibly a flashlight or a small explosion, illuminates a chaotic scene. In the foreground, a large, white, clawed hand reaches out from the darkness. The background is dark and filled with various objects, including what appears to be a red and white striped object, possibly a candy cane or a small figure, and other indistinct shapes. The overall tone is dark and mysterious, with a focus on the glowing light source and the reaching hand.

**JACK AND THE BEANSTALK**



Did you  
see that  
deer?

Greenwich

710-1-8-1-4:07

1522

### Tiger trader

Lightning

PRISM

**CentreSoft**

### PCS DISTRIBUTION

**Bulldog**

**SEL**

If you have difficulty finding the answer, look at (a) in the *Comments* below.

That Computer Software Co. Ltd., Erskine Industrial

<input type="checkbox"/>	A	<input type="checkbox"/>	D	<input type="checkbox"/>	G	<input type="checkbox"/>	J	<input type="checkbox"/>	L
<input type="checkbox"/>	B	<input type="checkbox"/>	E	<input type="checkbox"/>	H	<input type="checkbox"/>	I	<input type="checkbox"/>	
<input type="checkbox"/>	C	<input type="checkbox"/>	F	<input type="checkbox"/>	I	<input type="checkbox"/>	K	<input type="checkbox"/>	

1. *Introduction* (1998) 1

\_\_\_\_\_

**Address** \_\_\_\_\_

\_\_\_\_\_





100





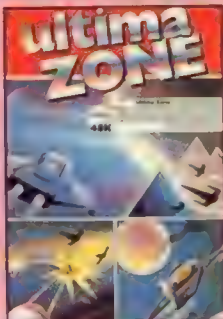
## MEGAWARZ

**Game:** MEGAWARZ  
**Maker:** PARAMOUNT SOFTWARE  
**Machine:** COMMODORE 64  
**Format:** cassette  
**Price:** £7.50  
**Rating:** KK

*Mega Warz* is a cracking game derived from Asteroids. To return to Earth you have to visit seven planets. Each has its own, increasingly determined nasty alien hordes to contend with. I hate to admit it, but I only got as far as Neptune. And it wasn't for lack of trying. It takes a lot of skill to manoeuvre the sensitive spacecraft, without sending it flying into collision with a Baddie. That's my excuse and I'm sticking to it. Pure addiction — I loved it! — N.X

## Tri-Zapper

An attractive, smooth-running arcade three-parter that's simple enough to lure you inwards yet complex enough to give you a run for your money after a level or six (which frankly is all I've ever managed). You grapple first with what appear to be a mutant bunch of those tried and true *Invaders*, the spear-carriers of the video game and here, appropriately enough, dubbed "Walkons". This task is complicated by the gradual release of hazardous and disconcerting bouncing bombs. Proceed to the cunning bonus stage which entails some tricky manoeuvre-



ing of a "Henk Class Cruiser" before destroying some small and perfectly defenceless white dots. Finally you must pilot another ship through rows of enemy craft and past lethal comets in order to dispose of a hostile spy satellite.

Thereafter it all repeats, but with more Walkons, bouncing bombs, enemy craft, comets, spy satellites and of course small, defenceless white dots.

Controls are pleasingly simple, graphics neat if a trifle flat and unimaginative. A game where calm and method count for more than flash and bravado which at first made me think its pleasures were subtle, but left me wondering whether they were merely shallow. — P.R

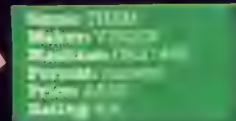
**Game:** ULTIMAZONE  
**Maker:** TANSOFT  
**Machine:** ORIC 48K  
**Format:** cassette  
**Price:** £8.50  
**Rating:** KK



## THOSE...

A witty and inventive "Paranoid Fantasy" — so sub-titled, it seems, because "THEY" are out to get you. Sure, that just gives it something in common with about 95% of all other arcade games, but in this one "THEY" are fiendish indeed: taunting demons, homing bombs and — worst of all — question marks that follow you around. Add to this some devilishly awkward controls — LJKM for up-down, left-right movement and firing direction plus further keys for shields and bullets — and it all adds up to the kind of game that can send you scuttling off to your first nervous breakdown. In short, it's horribly difficult.

Good job, then, that it's got a sense of humour. You, for example, are a dippy-looking smiley face. The question mark's a laugh too. So is the rather melodramatic fourth stage (actually, like the second, a bit of a doddle) in which you're trapped on a "Conveyorbelt To Doom", like a scene from an old Vincent Price movie, until you blast the "nightmares" in the time-honoured fashion. Even the fifth level, where you must match up pairs of funny bones with yet more smiley faces, looks like it might be a giggle but I've only got there a few times and am thus still thrust into a state of panic and confusion whenever I do. — D.R.



WHO  
DUG  
THIS  
UP?



What's this? *Digger*? Sounds like an Australian down a coal mine. Let's load it and see what happens (Loads program and reads title page). 'By the Keyboard Kid' says the screen. Yawn. The title page shows the controls so I know what to do. Up, down, left, right and pump. Pump? Nothing here about mending punctures (re-reads minimal instructions on package). Ah. It seems there's this garden plagued by things called Footas and Pubars which are highly averse to being pumped up with said pump. They have a tendency to explode. I'm sure I would too. Footars can breathe fire and gamma rays which is no good for the tomatoes so it's up to you to do something about it.

It only took a couple of goes to form an opinion about *Digger*. The sound was like the wind going out of a rubber duck. The graphics were slow and jerky with nasty glitches left on the screen when the beasts explode and the program crashed twice for no reason and had to be reloaded.

In a word forget it. I have. — K.A.

**Game:** DIGGER  
**Maker:** VISION  
**Machine:** BBC

**Format:** cassette  
**Price:** £10.95  
**Rating:** Nish

Asterisk  
seventeen  
admitted  
for  
ever the  
ing into  
and I'm  
N.X.

Build up your character sets with this  
useful utility from N. DRUMMOND.  
Design your character on-screen in  
chunky or normal style. Fiddle a font,  
create a capital or lay down a lower  
case.

B B C

# CHARACTER DEFINER

```

1000 PRINT COLUMN:="X",1
2000 ERROR GOTO 940
3000 :
4000 L" *****
5000 L" **CHARACTER DEFINER**
6000 L" ** By N.Drummond **
7000 L" **
8000 L" ** V.1.0 (C)1992 **
9000 L" *****
100 :
110 DIM V(B):N%=224
120 MODE 7
130 ORIZ=1 TO 2
140 PRINT TAB(0,1%);CHR$132CHR$157CHR$14
150 PRINT TAB(11,1%);"CHARACTER DEFINER"
160 NEXT
170 PRINT TAB(9) "MOVE"
180 PRINT TAB(9) "-----"
190 PRINT " I U"
200 PRINT " J/K LEFT/RIGHT"
210 PRINT " M DOWN"
220 PRINT "USE A' TO PLACE A DOT"
230 PRINT "AND S' TO ERASE ONE"
240 PRINT "WHEN A CHARACTER IS FINISHED"
250 PRINT " SIGN GIVES THE VDU23 CODE."
260 PRINT "DO YOU WISH CHUNNY(C) OR NOR"
270 PRINT "MAL? (170 CHARACTER$)";A$=GET$:IFA$="
280 PRINT "N%:ELSE MODE 4:M%=2
290 GOTO 1108
300 ORY=1108
310 INITAB(X,Y):="-"
320 FOR X1
330 PRINT TAB(12,0) "12345678":FOR Z%=1108
340 PRINT TAB(11,Z%);Z%:NEXT
350 PRINT TAB(1,1);
360 REPEAT
370 GOTO INEY$(0)
380 IF I$="A" OR I$="S" THEN PROCNUM:PROCPR
390 IF I$="I" AND V$US THEN VDU11
400 IF I$="J" AND V$OS THEN VDU8
410 IF I$="K" AND V$O THEN VDU14
420 IF I$="M" AND V$OS THEN VDU10
430 UNTIL I$="@"
440 PRINT TAB(0,20) "FINISHED",0%:IF 0%
450 THEN MODE 7:VDU14:PROCDEF:END
460 PRINT TAB(0,1):VDU11:;N%:1 OR 1110
470 PRINT " ",V%(1):NEXT VDU10,13:FOR I=51
480 PRINT " ",V%(1):NEXT I
490 PRINT:PROCCHANGE
500 GOTO 60
510 DEF PROCNUM
520 TAB:POS:V=V$OS
530 IF C=0 THEN NUM=1 ELSE NUM=2
540 V%=1%
550 C=(USR(&FFI4) AND &FF00)/&FF00
560 IF I$="A" AND C=45 V%(V%)=(V%(V%)+NUM
570 IF I$="S" AND C=45 V%(V%)=(V%(V%)-NUM
580 ENDPROC
590 DEF PROCFIN
600 DEF PROCFIN
610 POS:V=V$OS
620 IF I$="A" AND C=45 V%(V%)=(V%(V%)+NUM
630 IF I$="S" AND C=45 V%(V%)=(V%(V%)-NUM
640 ENDPROC
650 DEF PROCCHANG
660 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1
670 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1
680 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1
690 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1
700 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1
710 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1
720 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1
730 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1
740 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1
750 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1
760 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1
770 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1
780 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1
790 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1
800 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1
810 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1
820 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1
830 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1
840 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1
850 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1
860 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1
870 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1
880 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1
890 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1
900 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1
910 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1
920 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1
930 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1
940 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1
950 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1
960 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1
970 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1
980 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1
990 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1
1000 PRINT TAB(0,17) "FOR I=1 TO 10:FOR I=1

```

# PADLOCK

Keep unauthorised fingers off your BBC micro with this useful utility. KIM ALDIS opens the door to secure programs...

HAVE YOU EVER come home after a hard day's graft and a less than invigorating bus journey and found everyone bar the cat crammed around your BBC, oblivious of everything except the annihilation of any alien daft enough to stick his head round the screen? If you had the foresight to build the BIG K EPROM Programmer then this could all change because now you can hardware lock your computer with *Padlock*.

*Padlock* is a short machine code routine which you can blow into an EPROM and place in one of the sideways ROM sockets of your computer. When inserted it stops anyone using the computer without a password.

The accompanying listing contains the *Padlock* routine along with a BASIC utility so that you can easily set up the sort of display you want and your own personal entry code.

First of all type in the listing. Before you do anything else save it to tape. If you don't and you've made a mistake you may find the system will crash and you'll have to start all over again. It wouldn't hurt to have a friend to check through it with you as well. Remember that the only real test for bugs in the assembler section is when the code is blown into the EPROM.

When run the program will present a prompt asking you to input the display message which

will confront you when you switch on (you might wish to display your name and address in case the machine is stolen). The program allows you to include carriage returns so you can format the display in any way you wish but you can only have 250 characters. There is a small display in the top right corner indicating how many characters you have left. It's useful to remember that the SHIFT function keys will insert control characters so that you can have colours in the display.

When satisfied press the <TAB> key and you will be asked to input the entry code. The same rules apply as before but don't make the code too complicated. If you forget it you won't be able to use your own machine! Remember that *Padlock* will also expect any spaces or control characters that you enter here.

You will now be asked whether you want the routine assembled with the test addresses or EPROM addresses. You would be well advised to test the routine first so press T. The program will call *Padlock* three times. Firstly as though it were a cold start and finally as from BASIC, you will have to type 'OLD' to get your program back (this routine is not really to test your display but more as a means of checking for bugs in the machine code).

Now you know that the program works you can run it again

and assemble it with the EPROM addresses. The program will now save the buffer for you ready to load into the buffer area of the EPROM programmer.

After the EPROM is blown it can be placed in any of the sideways ROM sockets but it must have a lower priority than BASIC (i.e. in any socket left of BASIC). A word of warning about this one. If you don't feel confident about playing around inside the computer then get someone who knows to do it for you. Cracked boards and bent pins on chips can be expensive!

You can also call *Padlock* with 'LOCK' at any point in a BASIC program, useful if you want to keep that blockbusting game

This is set up by *PROChdr* and contains information like jump instructions for the service and language entry points and the title and copyright strings of the EPROM.

The three service calls that we need to intercept are Break, \*HELP and unrecognised operating system command (a '0' command). These will enter into the ROMs at the service entry point ('service') with the numbers 3, 9 and 4 respectively in the accumulator and if you look at lines 210 to 280 you can see that the first thing we do is to check for these numbers and branch to the appropriate sub-routines if they are detected. If not the ROM is excited.

If a Break is detected control is passed to the subroutine 'break'. This saves the registers and then calls two further sub-routines, 'padlock' and 'basic'. The 'padlock' routine prints the display message to the screen and waits for the correct entry code after which 'basic' enters BASIC after finding out which socket it is in.

If the user (this is you, by the way) has issued an unrecognised command, control goes to 'command' which checks if the command was '\*LOCK'. If it was we don't need to call BASIC after the entry code has been input since we want to return control to the users program, so only subroutine 'padlock' is called after which the ROM is excited.

Finally, if \*HELP is issued then 'help' prints out the title of the EPROM as held in the information block at the beginning of the chip and then leaves the chip.

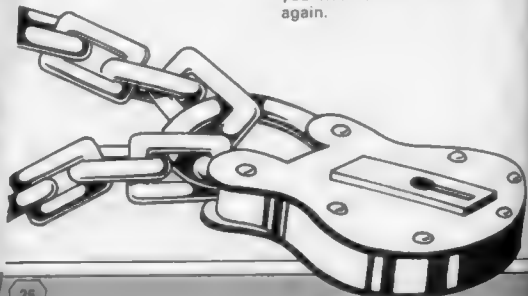
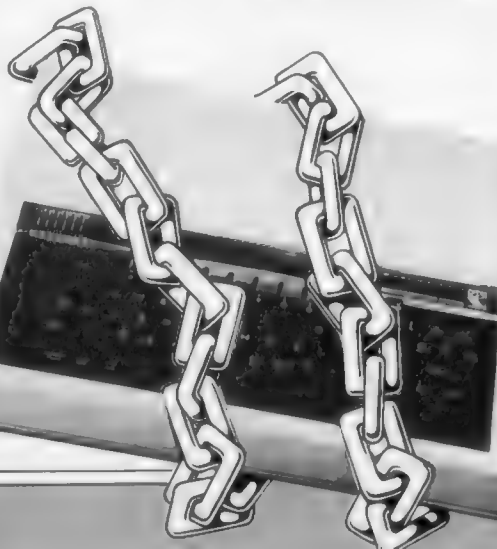
Now all you have to do is start key-tapping. Remember, though, you must make sure that the program is fully debugged. If there is any problem with the EPROM software then chances are the machine will crash and you will have to start all over again.



you've been working on away from pirates!

There are several ways of entering paged ROMs on the BBC Micro, but the method we are interested in is known as 'Service Call Entry'. Under certain conditions the ROMs are scanned with a number in the accumulator according to the type of service requested. The ROM can inspect this number and decide whether to take action or not.

When paged ROMs are entered an information block is expected by the operating system.





```
1800CLS PRINTdouble;CHK$129+"MESSAGE ON  
LUL: START ",0;  
1810IFUCentre;CHK$133+"PRESS TAB;  
WHEN FINISHED ",23;  
1820PRINTTAB;26,3,"thars  
Left",CHK$129,"30"  
1830PRINTTAB;0,5  
1840letter;"0" message$=""  
1850GOTO 1800
```

```
1870IF ASC(AS)=13 AS=AS+CHP$10
1880IF ASC(AS)=127 H#:
```

```

ASC: RIGHTS( message$, 1 ) = 18 THEN
message$ = LEFT$( message$, 1 - math% - 2 )

```

```
1888IF ASC(MS)=127 AND
ASC(RIGHT(message,1))=10 THEN
message=LEFT(message,length-1)
```

```

1506 IF ASC(RB) > 127
210 IF A < 10 THEN A = 10 + A + RB

```

```
1910length%:=LEN message$ .
1920IF length%:=230
```

```
PRINTAB(20,3),CHR0136 YDU 7
1930PRINTAB(37,3),250-length%," "
1940PRINTAB(0,5) NEXT AB
```

```
1950PRINT " ",CHR$(127),
1960UNTIL AB=CHR$(0) OR length%>=250
```

```
1970IF NOT FNoption("Is this
0.K?", "Y", "N") OR (LEN(message$)>250)
THEN 1000
```

1980EN:PROC  
1980FEM:

```
2000DEFFRUCK;
2010CLS PROCdouble<CHR$129+"ENTRY CODE
```

```
2020PROCcentre(CHRS133+"PRESS (TAB)
WHEN FINISHED " 00.
```

```
203DPRINTTAB: 26,3), "Chars  
Left", CHR0129, "250"
```

```
2040PRINTTAB(0,3),
2050letter% = 0 key$ = ""
```

```
2060FEPIH
2070AS=GETO
2080IE BSC(AS)=12 AS=AS+CHP*10
```

```
2090 IF ASC(AB)=127 AND  
ASC(RIGHT$(key$,1))=10 THEN
```

```
key$=LEFTS(key$,length%-2)
2100IF ASC(AS)=127 AND
ASC(AS)=127 THEN
```

```

ASC(RIGHTS$key$1)>10 THEN
key$=LEFTS(key$,length%-1)
2110 IF ASC(R$)<>127 key=key$+CHR

```

```
2120length% = LEN(key$)
2130IF length% = 230
```

```
PRINTAB(20,3),CHR#136 VDU7
2140PRINTAB(37,3),250-length%," "
2150PRINTAB(2,5),length%
```

```

2150PRINT AB:0,57,K99.
2160PRINT " ".CHR$(127.
2170UNTIL AB=CHR$(0) OR length%=250

```

```
2180 IF NOT FNOption("Is this O.K.",
", "Y", "N") OR LEN(key) > 250 THEN 2010
```

21001  
21002  
21003

```
2220DEFPRUtest_or_:=FALSE
2230testadd%:=FALSE eprn:=add%:=FALSE
```

```
2240PRINT''
2250IF FNoption="TEST OR EPROM
```

```

EXPRESSO", "-l", "-E" %p4=buffer%+&28 o%=0 o
pt1%=0 opt2%=2 testadd%=TRUE ELSE
p4=buffer%+4 opt1%=4 opt2%=

```

```

22@OPRINT'

```

2270ENDPROC  
2280REM  
2290GOTO 1000

```
23ULFPRUCcentre( CHPS130+AS+"
(" +BS+" / "+CS+" ) ",VPOS+2)
```

```
2310*PERT
2320opt%=GET
```

```
2330 IF opt% > 96 opt% = opt% - 32
2340 opt$ = CHR$(opt%)
2350 UNTIL opt$ = "R" OR opt$ = "C"
```

```
2368 IF opt8=B8 =TRUE
2369     FHLSE
```

2. L'EFFET de tout le MS, y.

```
2410PRINT TAB(X%,Y%)CHR$(141),AS
2420PRINT TAB(X%,Y%+1)CHR$(141),AS
```

2430END-PRG  
2440REM"

```
2450DEFPROC Centre(AS, y%)
2460  A%=(40-LEN(AS))/2
2470  DEFINTAB: 0 TO 100
```

2480 E. 10TH AVE.  
DENVER, CO 80202

2000-11-11 10:00:00

2520H2=9 CALL service  
2530H=114 ET 200  
2540

78F 3=260 78F2=0 98.0000="LULU" A2=4 Y2=0  
HL L service

205047-3 CALL Service  
2000000000

---

[illegible]

```

1800CLS PROC DOccnter CHR$129="MESSAGE ON
LVL START ",0)
1810PROC DOccnter CHR$133="PRESS TAB
WHEN FINISHED ",23)
1820PRINTTAB(26,3),"Chars
Left",CHR$129,"250"
1830DEFINT INTAB(0)
1840letter%:=0 message%=""
1850LEFT$=""
1860H$=H$+1$
1870IF ASC(AB)=13 H$=H$+CHR$11
1880IF ASC(AB)=127 H$=
ASC(RIGHT$(message%,1))=10 THEN
message%:=LEFT$(message%,length%-2)
1890IF ASC(AB)=127 AND
ASC(RIGHT$(message%,1))=10 THEN
message%:=LEFT$(message%,length%-1)
1900IF ASC(AB)=127
message%:=message%+H$
1910length%:=LEN(message%)
1920IF length%>230
PRINTTAB(20,3),CHR$136 VDU 7
1930PRINTTAB(37,3),250-length%," "
1940PRINTTAB(0,5),message%
1950PRINT " ",CHR$127
1960UNTIL AB=CHR$(0) OR length%>250
1970IF NOT FNoption"Is this
O.K.","";"N") OR (LEN(message%)>250)
THEN 1800
1980DEF PROC
1990DEFINT
2000DEFPROC key
2010CLS PROC DOccnter CHR$129="ENTRY CODE
",0)
2020PROC DOccnter CHR$133="PRESS TAB
WHEN FINISHED ",23)
2030PRINTTAB(26,3),"Chars
Left",CHR$129,"250"
2040PRINTTAB(0,5),
2050letter%:=0 key%=""
2060REPEAT
2070H$=H$+1$
2080IF ASC(AB)=13 AB=AB+CHR$10
2090IF ASC(AB)=127 AB=
ASC(RIGHT$(key%,1))=10 THEN
key%:=LEFT$(key%,length%-2)
2100IF ASC(AB)=127 AND
ASC(RIGHT$(key%,1))=10 THEN
key%:=LEFT$(key%,length%-1)
2110IF ASC(AB)=127 key%:=key%+H$
2120length%:=LEN(key%)
2130IF length%>230
PRINTTAB(20,3),CHR$136 VDU 7
2140PRINTTAB(37,3),250-length%," "
2150PRINTTAB(0,5),key%
2160PRINT " ",CHR$127
2170UNTIL AB=CHR$(0) OR length%>250
2180IF NOT FNoption"Is this O.K.",
"";"N") OR LEN(key%)>250 THEN 2010
2190
2200DEF PROC
2210DEFINT
2220DEFPROC testopt,opt%
2230testadd%:=FALSE optromadd%:=FALSE
2240OPTINT=""
2250IF FNoption"TEST OR EPPROM
ADDRESSES","","";"p%:=buffer%+820 o%:=0
opt%:=0 opt%>2 testadd%:=TRUE ELSE
opt%:=opt%+buffer%+820 opt%:=opt%+
buffer%+820
2260PRINT
2270DEF PROC
2280DEFINT
2290DEF FNoption"AB,BB,CC"
2300PROC DOccnter CHR$130="AB="
"+BB="+CC=" ",VPOS+2)
2310REPEAT
2320opt%:=GET
2330IF opt%>96 opt%:=opt%-32
2340opt%:=HEX$(opt%)
2350UNTIL opt%>96 OR opt%>C0
2360IF opt%>96 opt%:=TRUE
2370IF FALSE
2380DEFINT
2390DEFINT testopt% AB,BB,CC
2400="AB=3B-LEH AB",2
2410PRINTTAB(X,Y),CHR$141,AB
2420PRINTTAB(X,Y+1),CHR$141,AB
2430DEF PROC
2440DEFINT
2450DEF PROC DOccnter AB,X,Y
2460="AB=4B-LEH AB",2
2470PRINTTAB(X,Y),AB
2480DEF PROC
2490DEFINT
2500DEF PROC DOccnter
2510="AB=5B-LEH AB",2
2520CALL service
2530="AB=6B-LEH AB",2
2540DEF PROC DOccnter
2550="AB=7B-LEH AB",2
2560DEF PROC DOccnter
2570="AB=8B-LEH AB",2
2580DEF PROC DOccnter
2590="AB=9B-LEH AB",2
2600DEF PROC DOccnter
2610="AB=AB-LEH AB",2
2620DEF PROC DOccnter
2630="AB=BB-LEH AB",2
2640DEF PROC DOccnter
2650="AB=CC-LEH AB",2
2660DEF PROC DOccnter
2670="AB=DD-LEH AB",2
2680DEF PROC DOccnter
2690="AB=EE-LEH AB",2
2700DEF PROC DOccnter
2710="AB=FF-LEH AB",2
2720DEF PROC DOccnter
2730="AB=00-LEH AB",2
2740DEF PROC DOccnter
2750="AB=01-LEH AB",2
2760DEF PROC DOccnter
2770="AB=02-LEH AB",2
2780DEF PROC DOccnter
2790="AB=03-LEH AB",2
2800DEF PROC DOccnter
2810="AB=04-LEH AB",2
2820DEF PROC DOccnter
2830="AB=05-LEH AB",2
2840DEF PROC DOccnter
2850="AB=06-LEH AB",2
2860DEF PROC DOccnter
2870="AB=07-LEH AB",2
2880DEF PROC DOccnter
2890="AB=08-LEH AB",2
2900DEF PROC DOccnter
2910="AB=09-LEH AB",2
2920DEF PROC DOccnter
2930="AB=0A-LEH AB",2
2940DEF PROC DOccnter
2950="AB=0B-LEH AB",2
2960DEF PROC DOccnter
2970="AB=0C-LEH AB",2
2980DEF PROC DOccnter
2990="AB=0D-LEH AB",2
3000DEF PROC DOccnter
3010="AB=0E-LEH AB",2
3020DEF PROC DOccnter
3030="AB=0F-LEH AB",2
3040DEF PROC DOccnter
3050="AB=10-LEH AB",2
3060DEF PROC DOccnter
3070="AB=11-LEH AB",2
3080DEF PROC DOccnter
3090="AB=12-LEH AB",2
3100DEF PROC DOccnter
3110="AB=13-LEH AB",2
3120DEF PROC DOccnter
3130="AB=14-LEH AB",2
3140DEF PROC DOccnter
3150="AB=15-LEH AB",2
3160DEF PROC DOccnter
3170="AB=16-LEH AB",2
3180DEF PROC DOccnter
3190="AB=17-LEH AB",2
3200DEF PROC DOccnter
3210="AB=18-LEH AB",2
3220DEF PROC DOccnter
3230="AB=19-LEH AB",2
3240DEF PROC DOccnter
3250="AB=1A-LEH AB",2
3260DEF PROC DOccnter
3270="AB=1B-LEH AB",2
3280DEF PROC DOccnter
3290="AB=1C-LEH AB",2
3300DEF PROC DOccnter
3310="AB=1D-LEH AB",2
3320DEF PROC DOccnter
3330="AB=1E-LEH AB",2
3340DEF PROC DOccnter
3350="AB=1F-LEH AB",2
3360DEF PROC DOccnter
3370="AB=20-LEH AB",2
3380DEF PROC DOccnter
3390="AB=21-LEH AB",2
3400DEF PROC DOccnter
3410="AB=22-LEH AB",2
3420DEF PROC DOccnter
3430="AB=23-LEH AB",2
3440DEF PROC DOccnter
3450="AB=24-LEH AB",2
3460DEF PROC DOccnter
3470="AB=25-LEH AB",2
3480DEF PROC DOccnter
3490="AB=26-LEH AB",2
3500DEF PROC DOccnter
3510="AB=27-LEH AB",2
3520DEF PROC DOccnter
3530="AB=28-LEH AB",2
3540DEF PROC DOccnter
3550="AB=29-LEH AB",2
3560DEF PROC DOccnter
3570="AB=2A-LEH AB",2
3580DEF PROC DOccnter
3590="AB=2B-LEH AB",2
3600DEF PROC DOccnter
3610="AB=2C-LEH AB",2
3620DEF PROC DOccnter
3630="AB=2D-LEH AB",2
3640DEF PROC DOccnter
3650="AB=2E-LEH AB",2
3660DEF PROC DOccnter
3670="AB=2F-LEH AB",2
3680DEF PROC DOccnter
3690="AB=30-LEH AB",2
3700DEF PROC DOccnter
3710="AB=31-LEH AB",2
3720DEF PROC DOccnter
3730="AB=32-LEH AB",2
3740DEF PROC DOccnter
3750="AB=33-LEH AB",2
3760DEF PROC DOccnter
3770="AB=34-LEH AB",2
3780DEF PROC DOccnter
3790="AB=35-LEH AB",2
3800DEF PROC DOccnter
3810="AB=36-LEH AB",2
3820DEF PROC DOccnter
3830="AB=37-LEH AB",2
3840DEF PROC DOccnter
3850="AB=38-LEH AB",2
3860DEF PROC DOccnter
3870="AB=39-LEH AB",2
3880DEF PROC DOccnter
3890="AB=3A-LEH AB",2
3900DEF PROC DOccnter
3910="AB=3B-LEH AB",2
3920DEF PROC DOccnter
3930="AB=3C-LEH AB",2
3940DEF PROC DOccnter
3950="AB=3D-LEH AB",2
3960DEF PROC DOccnter
3970="AB=3E-LEH AB",2
3980DEF PROC DOccnter
3990="AB=3F-LEH AB",2
4000DEF PROC DOccnter
4010="AB=40-LEH AB",2
4020DEF PROC DOccnter
4030="AB=41-LEH AB",2
4040DEF PROC DOccnter
4050="AB=42-LEH AB",2
4060DEF PROC DOccnter
4070="AB=43-LEH AB",2
4080DEF PROC DOccnter
4090="AB=44-LEH AB",2
4100DEF PROC DOccnter
4110="AB=45-LEH AB",2
4120DEF PROC DOccnter
4130="AB=46-LEH AB",2
4140DEF PROC DOccnter
4150="AB=47-LEH AB",2
4160DEF PROC DOccnter
4170="AB=48-LEH AB",2
4180DEF PROC DOccnter
4190="AB=49-LEH AB",2
4200DEF PROC DOccnter
4210="AB=4A-LEH AB",2
4220DEF PROC DOccnter
4230="AB=4B-LEH AB",2
4240DEF PROC DOccnter
4250="AB=4C-LEH AB",2
4260DEF PROC DOccnter
4270="AB=4D-LEH AB",2
4280DEF PROC DOccnter
4290="AB=4E-LEH AB",2
4300DEF PROC DOccnter
4310="AB=4F-LEH AB",2
4320DEF PROC DOccnter
4330="AB=50-LEH AB",2
4340DEF PROC DOccnter
4350="AB=51-LEH AB",2
4360DEF PROC DOccnter
4370="AB=52-LEH AB",2
4380DEF PROC DOccnter
4390="AB=53-LEH AB",2
4400DEF PROC DOccnter
4410="AB=54-LEH AB",2
4420DEF PROC DOccnter
4430="AB=55-LEH AB",2
4440DEF PROC DOccnter
4450="AB=56-LEH AB",2
4460DEF PROC DOccnter
4470="AB=57-LEH AB",2
4480DEF PROC DOccnter
4490="AB=58-LEH AB",2
4500DEF PROC DOccnter
4510="AB=59-LEH AB",2
4520DEF PROC DOccnter
4530="AB=5A-LEH AB",2
4540DEF PROC DOccnter
4550="AB=5B-LEH AB",2
4560DEF PROC DOccnter
4570="AB=5C-LEH AB",2
4580DEF PROC DOccnter
4590="AB=5D-LEH AB",2
4600DEF PROC DOccnter
4610="AB=5
```

# 68000 ASSEMBLER

Part 2 of BERNARD TURNER'S examination of this year's 'wonderchip'

THIS IS the second in a series of articles on the Motorola 68000 Microprocessor Unit, a silicon chip that has gained star status by virtue of being selected (in its 8-bit guise) by Sir Clive's Merry Men to grace the Sinclair QL.

It should not be overlooked that this very useful chip has been around for quite some time and is now appearing in computers such as Apple's Lisa, Macintosh and Fortune 16/32.

The 68000 has evolved from the Motorola stable from the 6800 through the 6809, finally to its present day implementation which has 10 times the relative processing performance of its original ancestor.

## HIGH-LEVEL

As in life, there are pros and cons of doing anything in a particular manner. In the case of 68000 language processing one might argue that high-level languages would be naturally faster than its 8-bit cousins, by way of benefitting from the chip's high-level language support philosophy. You could also put forward the view that, generally, high level languages are more productive from a time-taking point of view. Again I would agree with you — but point out that an assembly language program would be faster and more efficient during processing. I would also point out that if you write untidily and without thought for structure in a high-level language then it, too, can be difficult to debug. One place a high-level language can score is in its portability, should it in theory run on another machine using the same high-level language — but we all know what happens in practice! This is where assembly language very often fails. Due to its nature, it is often dependant on the hardware for which it has been written. Often it is necessary to have a thorough understanding of the hardware to make the best use of the machine; this may entail obtaining, reading and using knowledge from chip manufacturers' Data Sheets (information on a particular chip and its functions). Hopefully you can see from this that the language you choose to use is a matter of 'horses for courses'. I wouldn't (couldn't!) program a real time interactive arcade style game in R.P.G. II, but I would use it to program a report on insurance

premiums with sub-totals. But then, I'm naturally boring.

If you have programmed in a high-level language (presumably BASIC) you may not have known what is actually happening. Generally in interpreted BASIC, you have typed in a program and given the computer the command 'RUN', oblivious of the fact that simply to print the letter 'a' the processor has had to read what keys you have pressed, convert them to ASCII, store them in memory, validate your command, then decide where on the screen to print — and, if applicable, what bytes make up the image of an 'a' character when printed — finally returning to a routine that waits for your next key press.

The above may sound like a lot of work — and it is. But that is only an overview of what machine code does. Take the part above about 'validate your command'. What this entails is analysing your instruction, determining what is required to be done and doing routines at the 'machine level' to achieve that. By 'machine level' I mean the point where the software has finally, really, reached the hardware.

## READ AND WRITE

BASIC and other languages reside in memory (generally RAM so that they can be changed as required). When you run a program you do not think too much about where it is placed (location) in memory; similarly you never think twice where, and in what form, variables are located. When programming in assembly language that now becomes your decision. To help you manufacturers usually provide a 'memory map' of the machine. This normally gives you information such as at what address the screen starts and what address it ends at. ('Address', by the way, is only another word for 'location'). Other useful addresses generally given are operating system areas used, ROM locations, and, if the company is feeling benevolent, starting points (entry points) to useful machine code routines such as reading the keyboard and writing to the screen. A part of the machine you cannot usually access from a high-level language is the microprocessor itself. It is not part of the mem-

ory (see Fig 1) and thus you cannot read from it or write to it (from a high-level language) It normally contains its own memory called registers which can be manipulated by machine code instructions (generated by using an assembler).

## REGISTERED BITS

The 68000 contains two main types of registers — Data Registers and Address Registers. There are at any one time 8 of each available. They have names rather boringly called D0 to D7 for the Data Registers and — surprise, surprise — A0 to A7 for the Address Registers. They are all 32 bits wide (i.e. can hold a four byte value). There are three more registers in the 68000 and they are called the Program Counter, the Stack Pointer and the Status Register. The Program Counter and the Stack Pointer are both 32 bits wide whereas the Status Register is only 16 bits. The Program Counter holds the address of the next instruction to be processed from memory. The Status Register serves as an indicator to what has occurred in the machine. The Stack Pointer is used to contain the next free address in memory to the 'stack'. The stack can be likened to a very temporary note pad where information can be placed and retrieved. The Stack is not a Register itself and is not contained in the MPU but is assigned (allotted) an area of memory in which it can expand and contract. (Much more about the stack later).

Finally there is a register that is sometimes available and sometimes not. We have already mentioned it under stack pointer AND A7! The truth of the matter is that A7 and the Stack Pointer Register are the one and same thing. But just to complicate everything it has an auto-ego! There are in fact two Stack Pointers of which one only is accessible at a time. These two A7's both have names: the 'User Stack Pointer' and 'The Supervisor Stack Pointer'. What determines which one is accessed is the state of a bit in the Status Register. A bit, as you know, can be either set to a logical '1' or a '0'. It cannot be both, therefore it is either one Register (e.g. User Stack Pointer) or the other (in this example the

Supervisor Stack Pointer). (See Fig 2).

What has just been discussed is often termed 'the internal architecture' of a chip (it in fact encompasses the instructions as well). The external architecture is the memory and support chips and how these are arranged. In the 68000 MPU series the program counter and addressing of memory must occur on an even boundary (see Fig 3), if it doesn't then an exception occurs (a condition that the processor must attend to as quickly as possible).

The Motorola 68000 Microprocessor Unit (MPU) is the basis of a series of chips based on the same architecture. Its design philosophy is based on providing a simple, yet powerful, compact, yet useful instruction set and facilities both in hardware and software to enable it to be productive. In the next instalment we'll make a start on some machine code.

Figure 1

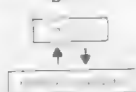


Figure 2

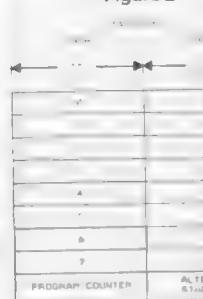
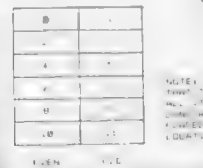


Figure 3



At £9.99 our games were a bargain...

At £6.99 they're a STEAL!!

COMPLETE THE ARCADE GAME

FLIP THE CASSETTE

SOLVE THE ADVENTURE



CBM 64

Quest for the Garden of Eden

Travel back through time to stop Adam eating that apple!

By Brandon James

SPECTRUM 16/48

Jokers Wild.  
Enemy aliens are capturing our souls with hypnotic cards. Stop them and save the human race!

By Nic Ford



DRAGON

The Emperor Must Die

The corrupt Emperor must be eliminated and you have been chosen!

By Tyrone Howe



At £9.99 the critics were unanimous in their applause for our concept of arcade and adventure. 'A splendid idea...' HOME COMPUTING WEEKLY

'Superb...' POPULAR COMPUTING WEEKLY

'Great!' COMPUTER & VIDEO GAMES

'Engrossing...' COMPUTER CHOICE

'An absolute gem!' SOFTWARE TODAY

What will the critics say now?

All at £6.99

Available from Boots and all good Computer Stores



CBM 64

The Sorcerer's Apprentice

Find the right spell to halt the mischievous brooms!

By Stuart Barnes



VIC 20

Four Gates

Rescue the humans from the catacombs of the Xzinnor Ants!

By Simon Wickes

PHOENIX



Please supply:

Quest for the Garden of Eden ☐ Jokers Wild ☐

The Emperor Must Die ☐ The

Sorcerer's Apprentice ☐ Four Gates ☐

I enclose a cheque/P.O. for: .....

Name .....

Address .....

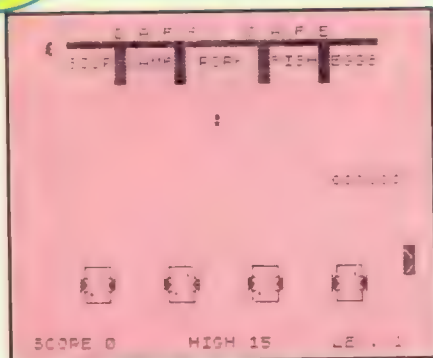
Phoenix Software Ltd.  
Spangles House,  
116 Marsh Road,  
Pinner, Middx.  
01-866 3353

Trade Enquiries  
Welcome

PROGRAMMERS! Have you written any good software? Send it to us for assessment and details of our superbly expensive.



"Ees no good, Mr Fawlfy. Ees too much! The trolleys they chase me. The customers, they get angry and change the order. The feet they throb from running. An' you say the game she has 13 levels? Aargh! I go crazy!"  
You'll have to excuse him, he's from Barcelona.



```

10 REM: 40 B: ADAM BULL 1984
11 RANDOMIZE: LET h:=0: PRINT
12 "PLEASE WAIT..." FOR x=0 TO 10
30 READ a: POKE USR a)+x,a: NEXT
T
20 PRINT PAPER 2: INK 6: FLASH
10: 20:0: PRESS A KEY: 1: FOR
INSTRUCTIONS: IF INKEY$="" THEN
GO TO 20
30 IF INKEY$="i" THEN GO SUB
000
40 LET d:=0: LET l:=1: LET sc:=0
LET m$="": LET w2:=0: GO SUB 100
0
50 LET me:=1: LET x$="1": LET x
=6: LET y:=15: LET xx:=x: LET yy=y
60 LET w1:=3: LET w3:=1: DIM y$(
4,4): LET i$="1111"
70 IF d THEN FOR u=1 TO 10+30:
PRINT AT 6,4,"d" to go on "q"
to quit" GO TO 120
120 FOR u=1 TO 20: PRINT AT x,y
,4: IF xx=y: OR yy=y THEN PRINT
T AT xx,yy:
130 LET x$=x: LET yy=y: LET x=x
+2: IF x$=6: INK i$=7: LET
y$=7: IF y$=4: INK i$=5:
LET z=ATTR(x,y): IF z=23 OR x=0
OR y=0 THEN LET i$=y$
120 IF z=32 THEN GO SUB 500
130 IF INKEY$="q" THEN GO TO 70
0
140 IF INKEY$="d" THEN LET l:=1
1: LET sc=0: PRINT PAPER 2: FLAS
H 1: INK 6: AT 21,0: "SCREEN DE
ONSTRATION:
150 LET a:=1: GO TO 320
160 IF z=57 THEN GO SUB 600
160 IF z=77 THEN FOR a=1 TO 10:
BEEP .0025:0 BEEP .0025:1: NEX
T a: LET sc=sc+75%: PRINT AT 21
,6: PAPER 2: INK 6:sc
170 IF c=5: INK w1:=1: AND w2 AND
w3:=0 THEN GO TO 700
180 IF a=77 THEN GO TO 800
190 IF a=5 THEN PRINT AT 5,w1
", INK 3,AT 6,w2,"R": LET w1=w2
LET w2=w3+3 IF w2=28 THEN LET
w3=0
200 IF w2=3+(13 AND 14) THEN L
ET w3=w3
210 NEXT u FOR w=1 TO 4 IF i$
INKEY$ THEN LET i$(w)=CHR$(CO
DE i$(w)+1)

```

```

220 PRINT AT 17, (W-1)*7+5, (S(W)
IF (S(W)=0) THEN GO TO 700
230 NEXT W: IF AND+20<(L+4) THEN
BEEP, (L+3): LET S=INT (AND+1+1
(L+5)): LET S=3: LET S=INT (AND+
+ ("LAMB" AND V=1) + ("PORK" AND V=
2) + ("FISH" AND V=3) + ("EGGS" AND
V=4): PRINT AT 17, (W-1)*7+5, (S(W)
) AT 20, (W-1)*7+4: PAUSE 1: INK
7, (S(W)
240 PRINT AT 11.5, " ", AT 11.5
PAPER 2, INK 7, AND RND+.15:
250 IF L=7 THEN PRINT AT 6, " "
, AT 6.2, PAPER 2, INK 7) (L=7) AN
D, RND+.63:
260 GO TO 100
270 REM = TAKE A MEAL +
500 BEEP+.02:30 LET M$="SOUP"
AND W=7+4: ("LAMB" AND W=7 AND 3
13: "PORK" AND W=12 AND W=13: "
" FISH" AND W=13 AND W=24: " EGGS
" AND W=24:
520 LET S=0: IF M$="" THEN
LET S=0:
530 PRINT PAPER 2, INK 7, AT 10
14.5, M$+ " " AND M$=: RETURN
540 HIGH " " AND MEAL+1:
550 IF M$="" THEN LET M$="SOUP"
LET S=0:
560 BEEP+.01:20 BEEP
+0.2:30 " " AND W=13: PRINT W
+0.2:30 " " AT 20, W-1:
570 IF W=13 THEN W=10:20 W=10:30
580 GO TO 540
590 PRINT AT 10, " " AT 10.2, PAPER 2, IN
K 7, " " AND RND+.15:
FLASH 1: " " AT 10.2, PAPER 2, INK 7, " "
AND RND+.15:
600 FOR W=10 TO 25 STEP 1:
BEEP+.1: BEEP+.1:W+1: BEEP+.1,
-1: NEXT W:
720 GO TO 20
300 REM = NEW LEVEL +
610 PRINT FLASH 1: AT 6.10, " "
ONUS" + " LET (L+1): FOR S=1 TO 30:
BEEP+.01:20+X: LET SC=S*5:
PRINT PAPER 2, INK 6, AT 21.6, SC
) AT 21.30, L: NEXT X:
620 PRINT AT 6.10
) AT 20.0: PAPER 2, INK 7; " " GO
SUB 1030
830 IF (L=2 THEN LET W=3+(L+1) AN
D (L=4): IF (L=3) THEN PRINT PAPER
2, INK 7, AT 10, " " AND (L=5) AT 11.28, " " AND
(L=7) AT 6.2, " " AND (L=7): PAPER
R 7: INK 0, AT 6.2, " " AND (L=6)
640 FOR X=0 TO L: PRINT INK 3, R
T INT (RND+3+13), INT (RND+28+2)
) " " NEXT X:
650 IF (L=5 AND L=10) THEN FOR X=
1 TO L-2: PRINT INK 3, AT INT (RND
D+4+4), INT (RND+28+3): "H": NEXT
X:
660 IF (L=9) THEN PRINT AT 4.2:
" ", AT 5.2, PAPER 2, INK 7; " " AND
) " "
) 10)
670 IF (L=1) THEN PRINT INK 3, AT
13.2, " " AND (L=2)
-1: " " AND (L=2)
880 GO TO 50
1000 REM = PICTURE +
1010 BORDER 2: PAPER 2, INK 7
LS
1020 PRINT INVERSE 1, AT 15.31, "
" AT 15.31 " " INVERSE 3: INK
) AT 0.2, "SCORE 0" HIGH "
1: TAB 25, "LEV. 1"
1030 INK 0, PAPER 2: FOR S=2 TO
6: PRINT AT X, " " NEXT X:
1040 FOR X=9 TO 11: PRINT AT X,
" " "AT X, 21, " " NEXT X:
1050 FOR X=12 TO 19: PRINT AT X,
1: TAB 31, NEXT X:
1060 FOR W=4 TO 25 STEP 1: PRINT
INK 1, AT 16, " " "AT 17, X: "
) AT 16, " " NEXT X:
1070 PRINT PAPER 2, AT 13, " "
) AT 2.3,
"OUP, LAMB, PORK, FISH, EGGS" AT 3
3:
1080 FOR W=1 TO 10: PRINT AT X,
+0.3 AND W=1: " " AND W=
"OR X=7) " NEXT X: PRINT AT 10,
" " "AT 11.5, " " AT 1.1: PA
ER 1: INK 5: EIGHT 1: "
1090 PRINT PAPER 2, INK 0, AT 10
25, "000000" RETURN

```

DAFFY CAFE

## SET MENU

5—left 8—right  
6—down 7—up  
(If you don't like the  
cursor keys, then  
the controls can be  
changed by alter-  
ing line 110.)

Any capital letters which are not obviously part of a word or sentence are user-defined graphics characters. These are in lines 50, 60, 190, 210, 520, 620, 840, 850, 870, 1060, 1080, 3080.









## No.3 RIVER RAID (Activision)

YOU CAN easily imagine professional fighter pilots turning pale and mumbling excuses when faced with Carol Shaw's *River Raid*. On the face of it, a suicide mission if ever there was one. This is a one-way river all right.

You are, collectively and individually, the pilot(s) of five low-flying, heavily armed marine attack aircraft, and your mission is to fly at nought feet up an endless branching fjord filled with the paraphernalia of war. Battleships steaming to and fro; fuel tankers; tanks; helicopters; jet aircraft and of course a series of bridges, each of which you must take out before you can continue your break-neck low-level mission.

Your mission is, simply, to blast as much as you can.

Isn't it always?

Nought feet is very low. You can fly over *nothing* and when objects in your path — like oddly nimble battleships — move to intercept you, you must either dodge or blow them away — because if you don't you fly smack into the side, pal, and that's where you lose one of the five-man team. Other hazards include mobile AA that shoots at you from the banks and bridges — the width of the banks varies amazingly, the River getting narrower the further you ascend it — and the unexpected appearances, after about Bridge 7, of phantom-like jet fighters.

Later still you get the fast helicopter gunships.

### TRAPPED AT ZERO FEET

You measure your ascent by bridges. These are the only regular feature in a fjord-like configuration that branches endlessly into islands and sub-waterways, some of these very narrow indeed. Sometimes these channels will be filled by enemy vehicles; at other times they will be empty save for the striped fuel tanks.

The fuel, embarrassingly, is collected by flying over it. (Oh well.) You keep track of your tank state by means of a gauge, and bells sound when the fuel gets low.

And get this. No matter what gets in your way — what unlikely or totally credible combination of enemy war machines should appear — you can *never* rise above nought feet. So to help you manoeuvre out of what can look like impossible situations, your

## ONE WAY DOWN THE RIVER OF DEATH



attack plane has massive air brakes that enable it to pull hi-G turns, as well as afterburners for that often-needed last-minute burst of speed.

Your armament, thankfully, seems infinite. A regular stream of armour-piercing rockets pours away with satisfying speed. Warships, beetle-like wandering helicopters, stationary fuel dumps... all disintegrate on the instant when clobbered by these magnificent air-to-ground missiles, so powerful that even bridges disintegrate on impact.

The earliest bridge-to-bridge killing zones are the easiest. Ships lie stationary and choppers hover dully, like bored flies. All fall prey to your jinking low-level fighter, flaps full on, pulling hi-G zigzags from bank to bank, blasting the enemy's property into scrap, and flying blithely through the tumbling ruins. Fuel dumps are common as muck, and as your fuel is still high you blast these contemptuously, content to collect the few lousy points they represent. The first bridge can be taken out at leisure — you even have time to pick off a couple more helicopters before flying through into the next open reach of River.

By now the defences are waking up and things are starting to happen. A great cruiser pulls into your path just as you approach; a swift salvo and he

vanishes in flame, but now here is a helicopter doing the same. A quick shot — he goes down — and a *swerve* past another chopper... a shot at a fuel dump... another, which misses, at a battleship — and you're past the first wave of defences and faced with a choice of routes.

The arm on the right is narrower, and involves a tighter turn to enter, but is relatively free from enemy, and moreover possesses two unguarded fuel dumps. (We are beginning to need fuel.) The one to port is wider, but more thickly peopled with enemies.

### SCORES, AWARDS AND MORE...

You hesitate too long, attempt the right-hand arm of the river, blow the turn, and pile into the island cliff. One down.

Next man starts from the last bridge passed. Pretty soon you are at Bridge Seven, and the enemy jets have showed up.

They come in fast, from left to right (or the other way around), pale blue ghosts that come right at you and can only be downed by good deflection shooting — and if not downed must be dodged by skilled flying. Avoiding them, you come into range of the banks, where mobile AA starts firing. They get your range very quickly, so if you see them landing salvoes ahead but in line... change your line fast. If you see them on the bridge, blast the bridge.

You can score very highly indeed at *River Raid*. There are reports of a million being scored. Certainly Carol Shaw's game, designed for and marketed by the US company Activision, has all the ingredients of compulsiveness. It is one of the very best — if not the best — of the vertical scrollers; the *Defender* of Up-and-down Land.

The game appeared originally in the UK early last year as an Atari VCS ROM, having already won countless awards from the US Game industry. Last Christmas it turned up as a ROM for Atari computers.

It is, of course, as we said, and as they always are, a suicide mission. Sooner or later your fuel gives out, or you misjudge a tight turn, and fly smack into something. Then it's over and you're left with a score which won't go halfway to telling the full story of all the sweat and terror of your last mission up the River of Death.

TONY TYLER



# — SOFT MACHINE —

P.O. BOX B1 · HEBDEN BRIDGE · W. YORKSHIRE HX7 6LG

Tel: (0422) 845378

HUNDREDS OF TITLES AVAILABLE. SEND SAE FOR LISTS & DETAILS OF SPECIAL OFFERS. STATE COMPUTER

SPECTRUM		ORIC		SCUBA DIVER		Durell		Super Pipeline		Tank Set	
			RRP PRICE		Black Crystal	Carnell	7.50	6.50	Golden Baton	Ch. 8	9.95 5.95
Chuckie Egg	A & I	6.90	5.95	Apocalypse	Redshift	9.95	8.50	Olympic Skier	Mr Chip	6.00	5.00
Casette 50	Cascade	9.95	8.50	Millionaire	Incentive	5.50	4.50	Red Alert	Mr Chip	5.50	4.50
Hunter Killer	Protek	7.95	6.75	Temples of Vran	Incentive	5.50	4.50	Outback	Paramount	7.50	6.50
Dungeon Master	Crystal	7.50	6.50	Titanic	R & R	7.95	6.75	Omega Run	C.I.R.	7.50	6.50
Rommels Revenge		7.50	6.50					The Hobbit	Melbourne	14.95	11.75
Quill	Gilsoft	14.95	11.95	COMMODORE 64		RRP PRICE					
Birds & Bees	Bug-Byte	5.95	4.95	Damsel in Distress	Alligata	7.95	6.75	BBC			OUR RRP PRICES
Android Two	Vortex	5.95	4.95	Brands	7.97	6.75	7.95	Dambusters	Alligata	7.95	6.75
Grand Prix Driver	Britania	6.95	5.95	Blogger	7.95	6.75	7.95	Lunar Rescue		7.95	6.75
Pyramid	Fantasy	8.50	4.75	Bug Blaster	7.95	6.75	7.95	Fruit Machine		5.96	4.95
Doomday Castle		6.50	5.75	Astecomb Adventure	7.95	6.75	7.95	Monaco		7.95	6.75
German Master A or B	Koemos	9.95	8.75	Haunted House	7.95	6.75	7.95	Casette 50	Cascade	9.95	8.75
French Master A or B		9.95	8.75	Squash a Frog	7.95	6.75	7.95	Homerace	Dynabyte	6.95	5.95
Fighter Pilot	Digital	7.95	6.75	Grid Trap	8.95	7.50	8.95	Pool	Dynabyte	7.95	6.75
Night Gunner		6.95	5.95	Jumpin Jack	8.95	7.50	8.95				
Jet Set Willie	S Project	5.95	4.95	Triad	8.95	7.50	8.95	Corporate Climber		7.95	6.75
Jutanhamun	Micromania	5.95	4.95	Twin Kingdom Valley	Bug-Byte	9.50	7.95	Leaming Syndrome		9.95	8.75
Blue Thunder	Wilcox	5.95	4.95	Quasar	Voyager	5.99	4.95	Spanish Tutor A or B	Cosmos	9.95	8.75
Urban Upstart	Shepherd	6.50	5.50	Hustler	Bubbie Bus	6.99	5.95	Twin Kingdom Valley	Bug-Byte	9.50	7.95
Black Alley	P.S.S	5.95	4.95	Pyramid	Fantasy	6.50	5.50				
Database	Gemin	19.95	16.95	Splat	Incentive	6.50	5.50				
Harner Attack	Durell	5.95	4.95	Colossus Chess	C.D.S.	9.95	8.50				

TO SOFT MACHINE: Please rush me the following tapes:

1 ..... 2 ..... 3 .....  
4 ..... 5 ..... 6 .....

I enclose CQ/PO No. .... for £ .....

SOFT Machine, P.O. Box B1, Hebden Bridge  
West Yorkshire, HX7 6LG

Name: .....  
Address: .....

Soft Machine is the trading name of Fabstar Computers Ltd.

**THE FABULOUS CASSETTE**

**50**

**FROM Cascade**

**ONLY £9.95**  
(INC. P&P and VAT)

**NOW AVAILABLE FOR**  
**Cx commodore 64**

**50 GAMES ON ONE CASSETTE**

DRAGON BBC AII Spectrum Apple ATARI ORIC1 ZX81 VIC-20

It is impossible to tell you everything about the 50 games on CASSETTE 50 but they include many types such as maze, arcade, missile, tactical and logic games. As well as most games in computer game playing.

CASSETTE 50 will appeal to people of all ages and the games will provide many hours of entertainment for all the family at a fraction of the cost of other computer games.

**EXPRESS DELIVERY- ORDER NOW**

Name: .....  
Address: .....  
Post Code: .....  
Country: .....

Please send me by return of post, Cassette 50 at £9.95 per tape. I enclose a cheque/postal order for  
£ ..... made payable to Cascade Games Ltd.

☐ SPECTRUM ☐ ORIC 1 ☐ ZX 81 ☐ VIC 20 ☐ APPLE  
☐ COMMODORE 64 ☐ DRAGON ☐ ATARI ☐ BBC AII ☒

Cascade Games Ltd  
Suite 4, 1-3 Haywa Crescent, Harrogate  
North Yorkshire, HG1 5BG, England  
Telephone: (0423) 504526

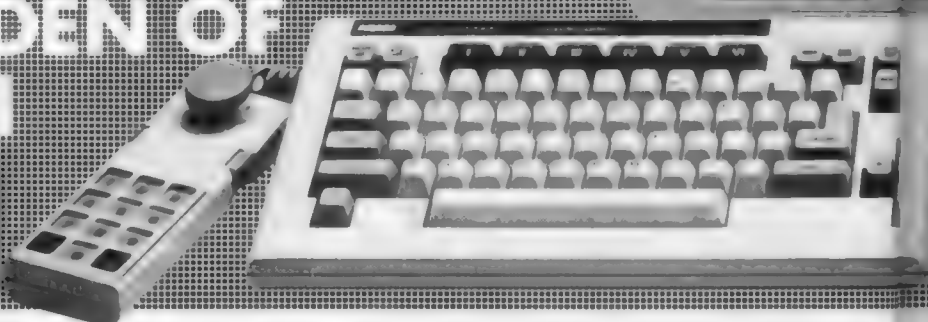
Dealers & Stockists enquiries welcome.

BK 7/84

## HARDWARE REVIEW

# NOT EXACTLY YOUR GARDEN OF EDEN

Does the Coleco Adam live up to its hype?  
**TONY TYLER**  
tells all



THE COLECOVISION ADAM was launched with a tremendous amount of brouhaha last summer, at the Chicago Consumer Electronics Show. Easily the most glitzy of all the incredibly glitzy stands, the Coleco operation featured half-hourly showings inside a smoke-filled booth wherein lasers played over face and body of a whole team of blondes who each delivered a setpiece spiel. Every now and again said blonde would delicately touch a slim, elegant ivory-coloured keyboard with a single red-painted talon.

This, we were told (at half-hourly intervals), was the Coleco Adam. The CBS-affiliated monster, having in the previous two years wiped the floor with the dedicated videogame opposition, was now unveiling its all-in-one machine designed to clean up the Stateside home computer market.

What we were looking at was a mockup — nothing new in that of course. And boy! Did it look promising! Slimline detachable keyboard, revived stringy-floppy data storage system AND a printer. We never saw the data storage doing its stuff, and we

never got to see or hear the printer in operation. But who cared? The whole package was going to retail before last autumn at about \$600. At that price, and if everything worked, within 18 months or so the Adam would undoubtedly be THE system for the US domestic computer revolution.

It was also games-based; you could actually use Colecovision ROMs as well as stringy-floppy versions of top arcade games.

Time passed. Adam didn't arrive on schedule. Again, nothing new in that, as we all know. But over here we began to hear rumours. Coleco, it was said, had blown it badly. The system was late, the price was now considerably higher (above \$1000) and, worst of all, there were major deficiencies in the package.

Still, it *had* looked good. This writer at least reserved judgment.

Until now. The version of Adam we here at BIG K finally received was the Module 3 version, different to the standalone Adam inasmuch as the package — data storage, keyboard and SmartWriter

printer — comes as a plug-in expansion to the existing Coleco video games console. As a result its footprint is truly colossal.

Switching on — the main power switch is sensibly placed behind the printer — puts you into electronic typewriter mode. Hitting the ESCAPE/WP key gives you the built-in wordprocessor.

Taking these first: the keyboard is good-looking and poised at a pleasant angle. The keys themselves are chunky and positive. In fact, the only really irritating fault is the lack of an LED to tell you when Shift or Control Lock is on (also the weird duplication of keys, such as Backspace and Cursor-left, which perform identically so far as I can see). The real trouble is with the software and the printer.

Typing in electronic typewriter mode is an awesome and infuriating business, made unbearable by the unbelievable noise of the daisywheel printer. I've heard it described as "like bamboo tearing". To me, it closely resembles the evening song of the AK47s as the Druze and Phalangite militiamen blast the wotsits out of each other in Beirut. Living with this printer in your home would be a nightmare. And it's SLOW; when you're on-line (in typewriter mode) the pistol shot of each printer stroke comes about half a second after you've typed the character in question, which is fantastically disorientating.

Moving into wordprocessor mode, you see on-screen the rather childish and archaic platen roll icon (your working area) embellished by six labels each

representing a function for the six function keys (constantly redefined — rather like Apricot's microscreen but not half so elegant). However, useless amenities aside (like changing the colour of the screen from Nasty to Horrible) it does work, even if it is slow and childish. In fact, it's a pretty good toy wordprocessor.

Adam is a Clean Machine in terms of built-in languages. SmartBasic (for which read Applesoft) loads in via the unusual high-speed (it says here) stringy-floppy arrangement. Eventually it appears and you can start programming. As I said, no surprises with the Basic itself; its pretty comprehensive and at least half-way to being structured. Maximum four-colour resolution is 256\*159 (HG with four lines of text, HG2 without). Which is not exactly scintillating — but by using USR routines I assume you can bodge a higher degree of resolution than that.

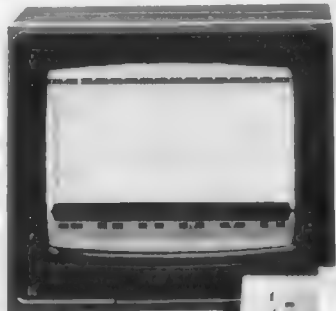
Colours are pure Coleco — vivid, not to say lurid, and quite easily accessible with the COLOR+ statement. The full palette is 16, which is better than most.

What is profoundly irritating is the lack of user RAM in Basic 80K, you've heard? Well, surely that must mean at least a genuine 64? Load Basic, type PRINT FRE(0) and you get 25 and a half K's to play with. Again, not bad compared with some machines, but far, far less than advertised.

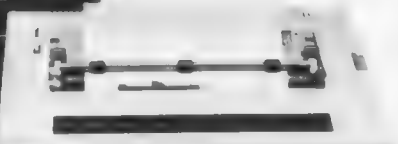
## VERDICT

ONE DOESN'T want to come down too heavily on this computer. Unfortunately you can't always have what you want. Definite plus points are the keyboard, which in the main is elegant, easy to use and well-furnished with dedicated keys, including six function keys. Commands like PRINT, DELETE, etc. can be handled via these keys, usually involving a planned

Screen display in wordprocessor mode. Monitor is not included in the Adam package.



The infamous SmartWriter. Ear protection is advised.





# LET'S GET

# FIZ-ICAL...

**RICHARD TAYLOR gets to grips with Primordial Peripheral's disc drive for the 48K Spectrum.**

I SUPPOSE IT WAS inevitable that someone, sooner or later would come up with a proper disc drive for the Spectrum. Even though Sinclair have launched their famous *Microdrive*, its distinct lack of availability (now being eased by limited shop sales) and relatively slow access speed (compared to a real disc system) have prevented its domination of the Spectrum mass storage system market.

There is something of a price gap, however, because the 'real disc system' under examination here will set you back nearly £250, close to the cost of two new 48K Spectrums, the only model this drive will work with.

The **FIZ** system (Floppy disc drive and interface for the ZX Spectrum, would you believe) comes in two units, the drive itself and, connected by 50cm of ribbon cable, the interface box which plugs into the back of the Spectrum.

The interface contains quite a large assortment of chips powered by an extra voltage regulator — there to ease the load on the Spectrum's already overworked and overheated internal regulator. The disc unit (a *Shugart* for those who must know) has a separate mains connection, so you may need a 2-way mains adaptor if you're suffering from 'clogged-up' power sockets and what hacker isn't these days? The 9 volt plug from the Spectrum's own power supply goes into the back of the interface box, the old socket being concealed by the interface.

Switch on and the disc whirrs into life. Instead of the usual Sinclair copyright line the screen clears with the message **FIZZ S3/540.4 OPERATING FIRMWARE** — 1983 **Macronics Systems Ltd**. There's no loading or saving of the DOS (Disc Operating System) from tape as the necessary software is held in an EPROM.

On power-up the contents of the EPROM is transferred to the top 4K of the Spectrum's RAM. With a further 4K being used by the DOS for temporary storage, the top 8K of RAM is technically rendered unusable.

This could've been a major drawback to the system, making useless many programs that rely on that top 8K for certain functions. However, Primordial supply a formatted disc that carries a special program called 'lodos'.

The program is called up by the command **dos**, thus the instruction **PRINT USR dos** transfers the DOS from high to low memory. Pretty neat.

The DOS itself relies heavily on BASIC variables and **USR** calls. After switching on the Spectrum the variables **as**, **bs**, **cs**, **dir**, **back**, **al**, **bl**, **cl**, **zap** and **nd** are initialised to the

addresses of machine code routines in the DOS. So, for instance, **PRINT USR dir** gives a list of what is on the disc — as well as an indication of the amount of storage capacity and the main disc title. The **USR** statement returns the number of any error that might have occurred and there is a comprehensive and helpful set of error codes.

The DOS has facilities to save and load BASIC programs, machine code programs (there's an auto-run facility for machine code) and arrays. It is also possible to format new discs, erase files or make back-up copies of discs. Some commands need filenames or other parameters passed to them. This is done by assigning the BASIC variable **fs** with the name before typing in the **USR** statement. For instance, **LET fs="Graph": PRINT USR bs** saves a BASIC program onto a disc called 'Graph'. The commands can be used equally as well in programs as they do as direct commands.

The drive uses single-sided, single density discs, each one capable of 109K of user-available storage. A disc is formatted using the **nd** command.

One of the 40 tracks on the disc is used by the DOS to store the directory, leaving the user with 39 tracks, each one with a capacity of 2816 odd bytes. One of the idiosyncrasies of the system is that a file will occupy at least a complete track even if it is only a few bytes in length — therefore placing a maximum limit of 39 files per disc.

The actual operation of the disc was extremely fast and reliable. The documentation, although brief, was adequate and well presented.

The **FIZ** system represents value for money if you use your Spectrum for program development or for some sort of data handling. I suspect, however, that the majority of users do not desperately need the added flexibility (and expense) of a proper disc system and would probably do better with a *Microdrive*.

The system will come into its own when more software is available to run on it. Some games material is available but, as I said, the price tag makes the **FIZ** a games system in the 'executive toy' class. Primordial have recently announced a word processing disc (based on the old 'Tasman' WP) and have an assembler in the works.

**FIZ** costs £249.95 from **Primordial Peripherals Ltd.**, 89 Herne Road, Bushey, Herts. **WD23LP**. The interface unit can be bought as a separate item for use with other disc drives, price £79.95.

sequence of strokes with an abundance of **ARE YOU SUREs** sprinkled at each stage. The adaptation of the Coleco keypad controller to serve as a numeric keypad is economic, though the *Adam's* ivory colour scheme and the jet black of the game console don't go too well together (and the joystick is virtually impossible to use when clipped down). The keyboard is detachable.

And that's about it on the plus side.

Against the machine are the pitiful RAM (pitiful when compared with what should be available, that is), the unbelievably ghastly printer, the slowness of the data storage unit — and little touches like the fact that (so far as I can see) you can't clear the screen in Basic without switching off (I'm sure I must be wrong about this but the manual was no help). Associated with this is the way in which a **LIST** command, in graphics mode, only gives you two lines at a time. To see the list you have to clear out the graphics and to do this you've got to reset. (Tell me I'm wrong Coleco.)

All in all the Coleco *Adam* is a major disappointment. Final price for the standalone version had (at time of writing) not been fixed, but seems likely to be in the £600-700 range. That is just simply too much when you consider that for the same money you could have a BBC B plus disc drive plus one of the cheaper monitors.

What Coleco did hit upon was the 'music centre' approach, with as many pieces in one budget package as possible. The same idea has clearly occurred to Amstrad, who now offer a genuine 64K, a monitor and orthodox cassette storage for half the *Adam's* price.

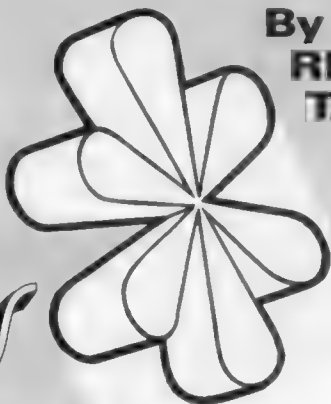
Rumour now has it that the *Adam* is bombing out in the States. I'm not surprised. Will it do any better over here? I'd be very surprised indeed if it did.

Sorr-ee



# TAYLOR -MADE GRAPHICS

By  
**RICHARD  
TAYLOR**



THE SPECTRUM MANUAL makes no mention of animation or movement, as if it is an area of computer science so unimportant and trivial that it is beneath its notice. Anybody who has seen any arcade-type games on the Spectrum would obviously realise that this is not the case: quite the reverse. Animation and character movement is probably the most important function of any microcomputer — let alone our trusty friend the Spectrum. What would all those Space Invaders, Pac-Men and so on be like if they were utterly motionless?

The movement that can be procured by the use of Sinclair BASIC can hardly be any competition to the marauding groups of fierce aliens elegantly transported around the screen with the use of breathtakingly fast Z80 Machine Code. Fear not because BASIC can equip you with some quite respectable animation if used to its full potential.

By utilising every last idiosyncrasy and short cut of BASIC for the sake of pure speed it is possible to produce animation programs written solely in BASIC which do not smack too highly of its slow speed.

The biggest problem with BASIC is that it does not possess any commands specifically designed with movement in mind. To emulate such commands requires a strange and complicated assortment of PRINT commands, perhaps with the inclusion of the odd colour statement or two.

The usual method of creating movement while using BASIC is to print the object on the screen, wait a while, erase the object by overprinting it with a space character, update its position in a certain way and then go back to the first stage — rather cumbersome but the only real solution. A simple program to perform such a task is as follows:

```
10 LET a=0: REM initial column
20 PRINT AT 10,a;"*": REM Print Character
30 PAUSE 10: REM Wait a bit
40 PRINT AT 10,a;" ": REM Erase character
50 LET a=a+1: GO TO 20: REM Update position
```

An asterisk plods along horizontally from the right to left and eventually disappears off the screen leaving the computer to impatiently reply with the error message "B Integer out of range".

By changing the value of the PAUSE statement residing at line 30 it is indeed possible to change the speed at which the object moves. Removing it altogether gives the asterisk a fair amount of speed, but remember we are only moving one object and not doing anything else besides that one menial task. The next short routine bounces a ball (or rather the letter 'O') around the screen — a more interesting movement.

```
10 LET x=16: LET y=11
20 LET a=1: LET b=-1
30 PRINT AT y,x;"O"
40 PAUSE 3
50 PRINT AT y,x;" "
60 LET x=x+a: IF x>31 OR x<0 THEN LET a=-a: GO TO 60
70 LET y=y+b: IF y>31 OR y<0 THEN LET b=-b: GO TO 70
80 GO TO 30
```

Here the updating section is a lot more complicated and involves checking if the object has violated the boundaries of the screen and, if so, changing its direction.

You may notice the flicker that is beginning to creep into the program. This results from the fact that the object is blanked out and therefore not present on the screen for a comparatively long time due to the added complexity of the position updating part of the program. To overcome this problem it is best to make the program remember the old position of the object before finding out what the new one is going to be, then the old position can be blanked out just before the new one is printed, giving the impression of continuous motion.

Not we have come to something a little more tricky: moving more than one object around the screen at a time. Below is a modified version of the bouncing ball routine which is able to cope with the strains of such animation.


```
10 INPUT "Number of objects?"; num
20 DIM x(num): DIM y(num)
30 DIM a(num): DIM b(num)
40 FOR n=1 TO num
50 LET a(n)=1: LET b(n)=-1
60 LET x(n)=RND #31: LET y(n)=RND #21: NEXT n
70 FOR n=1 TO num
80 LET oldx=x(n): LET oldy=y(n)
90 LET x(n)=x(n)+a(n): IF x(n)>31 OR x(n)<0 THEN LET a(n)=-a(n): GO TO 90
100 LET y(n)=y(n)+b(n): IF y(n)>21 OR y(n)<0 THEN LET b(n)=-b(n): GO TO 100
110 PRINT AT oldy,oldx;" "
120 PRINT AT y(n),x(n);"O"
130 NEXT n
140 GO TO 70
```

This program utilises arrays to store the co-ordinates and direction of each of the objects and uses a FOR/NEXT loop to update the positions of each of the objects in turn. Notice how the old position of each object, in turn, is held in (oldx,oldy) while the new position is calculated. The old position can then be overprinted immediately before the object is re-printed, avoiding any flicker. You can demonstrate the sluggish speed of BASIC if you enter a bigish number when the computer prompts you for the number of objects that are to be moved.

One of the biggest problems with Sinclair BASIC is that you are restricted to printing in the character grid of 32 columns and 22 rows. To produce smooth moving graphics you need to be able to make full use of the Spectrum's high resolution capabilities and be able to print anywhere on the high resolution grid of 256 x 176 pixels. Next month I will be presenting a short machine code program to do just that. I'll also be looking at much more complicated subjects such as acceleration and complex movement patterns.



# ANIROG

A cartoon mouse named Bongo, grey with large red ears, a red shirt, and red pants. He is shown in a dynamic pose, jumping or running with one arm raised in a fist.

## BONGO

## Flight Path 737

A space-themed scene featuring a large satellite or space station in the foreground, with several smaller spacecraft and missiles in the background against a blue sky.

## Space Pilot

### Bongo


Enjoy the hilarious antics of the comical mouse as he collects the lost diamonds. He climbs ladders, slides down chutes, use transporter and trampolines to jump across the divide. Multi screen game with three levels of difficulty.

Commodore 64 £7.95 — Vic 20 £7.95 — Spectrum £5.50

### Space Pilot

Realise your dreams of being king of the open skies. Fly your aircraft into unrelenting dog fights with enemy fighters. Prove how well you can handle your craft. Five stages of tough engagements.

Commodore 64 £7.95 — Spectrum £5.50

A large commercial airplane, a Boeing 737, is shown in flight against a sunset or sunrise sky. The plane is dark, and the sky is a mix of orange, red, and blue.

### Flight Path 737

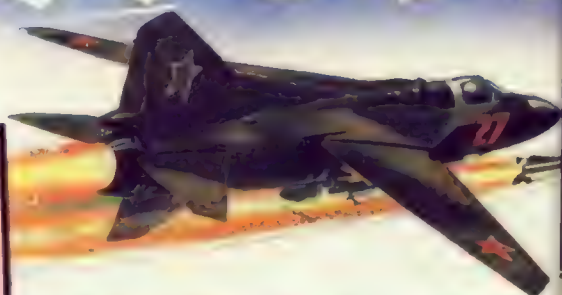
An advanced Pilot Trainer. Written by a flight simulator instructor and pilot. Panoramic Pilot's eye view.

Commodore 64 £7.95 — Vic 20 £7.95

## Also available on Disk at £9.95

TRADE ENQUIRIES ANIROG SOFTWARE LTD. 29 WEST HILL DARTFORD KENT (0322) 92513/8  
MAIL ORDER 8 HIGH STREET HORLEY SURREY 24 HOUR CREDIT CARD SALES HORLEY (02934) 6083  
PAYMENT BY CHEQUE P O ACCESS VISA 50p POSTAGE & PACKAGING £2.00 OVERSEAS

# for ORIC by KEVIN FREEMAN



*Ah, Roger, Oric base. Have the rogue bird in my sights. Understand need for direct hit to engine port to down enemy. Intelligence briefing showed effects of attack on other parts of rogue negligible. Beginning my run now. Fuel and missiles should just get me through. Ah, this is Thunder 5 — wish me luck...*

```

1 CLS:POKE618,10:HS=0
10 GOSUB1000
14 M=34:N=2:X=12:Y=23:Z=X:C=Y
16 PAPER4:INK7:CLS
18 FL=1750:MS=200:SC=0:SS=76:HH=16
20 PLOT0,0,16:PLOT0,1,16
22 PLOT38,0,20:PLOT38,1,20
24 A2$="ahija":B2$=" g"
26 A3$=" k":B3$="olmno"
30 FORI=16TO26:PLOT0,I,18:NEXT
32 FORI=3TO26:PLOT1,I,3:NEXT
34 PLOT21,0,1:PLOT21,1,5
36 PLOT1,0,4:PLOT1,1,6
100 REM.....CONTROL.....
102 REPEAT: SOUND4,40,6:PLAY0,7,7,0
110 Q$=KEY$
112 IFQ$=" " THENGOTO150
115 IFQ$=" " THENX=X+2
120 IFQ$=" " THENX=X-2
125 IFQ$="Z" THENY=Y-2:HH=HH-1
130 IFQ$="A" THENY=Y+2:HH=HH+1
145 IFQ$=" " THENGOSUB400
150 GOSUB200
152 FL=FL-1:IFFL<0THENFL=0
155 PLOT2,0,"FUEL "
156 PLOT11,0,RIGHT$(" "+STR$(FL),4)
160 PLOT22,0,"SCORE "
162 PLOT31,0,RIGHT$(" "+STR$(SC),4)
165 PLOT2,1,"MISSILES:"
167 PLOT11,1,RIGHT$(" "+STR$(MS),3)
170 PLOT22,1,"HI-SCORE:"
175 PLOT31,1,RIGHT$(" "+STR$(HS),4)
178 IFMS<20THENPLOT1,1,12
180 IFFL<100THENPLOT1,0,12
181 PLOT20,0,8:PLOT20,1,8
185 IFMS=0THENFL=0
190 UNTILFL=0
195 PLAY0,0,0,0:GOTO700
200 REM
205 PLOTZ+2,C-1," "
210 PLOTZ,C," "
215 PLOTZ,C+1," "
220 A1$=" d":B1$="abeca"
225 C$=" "
240 X=X-INT(RND(1)*3):X=X+INT(RND(1)*3)
250 Y=Y+INT(RND(1)*2):Y=Y-INT(RND(1)*2)
260 IFX>33THENX=33
262 IFX<2THENX=2
264 IFY>23THENY=23
266 IFY<3THENY=3
268 IFY<8THENA1$=A2$:B1$=B2$:C$="f"
270 IFY>13THENA1$=A3$:B1$=B3$
272 PLOTX+2,Y-1,C$
274 PLOTX,Y,A1$
275 PLOTX,Y+1,B1$
280 Z=X:C=Y:FL=FL-1
284 PLOT16,6,"[ ]":PLOT16,16,"[!]"
286 PLOT11,11,"[-]":PLOT22,11,"-]"
288 IFHH>25THENHH=25
289 IFHH<5THENHH=5

```

```

290 PLOT0,HH,18:PLOT0,HH-1,20
300 RETURN
400 REM.....MISSILES....
401 GOSUB200
402 PLOT17,6,"+":PLOT17,16,"+"
403 PLOT12,11,"+":PLOT22,11,"+"
404 SOUND4,11,9
405 FORJ=26TO14STEP-3
410 PLOTM,J,"\"
415 PLOTN,J,"/"
420 PLOTM,J," "
422 PLOTN,J," "
424 M=M-3:N=N+3
425 NEXT
430 M=34:N=2:FL=FL-1:MS=MS-2:SS=SS-2
432 IFSCRN(16,J)=98THENGOSUB600
435 PLOT17,11,"p"
440 SOUND4,40,6:PLAY0,7,7,0
450 PLOT17,J," "
499 RETURN
600 REM.....HIT.....
601 SOUND4,10,0:PLAY0,7,5,4
605 PLOTX,Y," pp "
606 PLOTX,Y+1,"p p p "
610 WAIT15:SOUND4,3500,0
615 PLOTX,Y,"p p p"
620 PLOTX,Y+1," p pp"
625 WAIT15:PLAY1,7,5,7
630 PLOTX,Y," "
635 PLOTX,Y+1," "
645 WAIT15:SOUND4,3000,0
650 SC=SC+150:SS
655 IFHS<9CTHENHS=SC
660 SS=75:X=27:Y=20
665 PLAY0,7,7,0
699 POP:RETURN
700 REM.....END OF GAME.....
705 PLOT12,8,"DISENGAGE"
708 WAIT150
710 CLS
715 PAPER0
720 PRINTCHR$(12):INK1
730 PRINTCHR$(4):CHR$(27):J
R "":PRINTCHR$(4)

```

FIGHTE



# FIGHTER



```

740 PRINT:PRINT:PRINT:PRINT"YOUR SCORE
WAS:";SC
750 PRINT:PRINT:PRINT"PRESS 'Y' TO PLAY
AGAIN"
755 PRINTSPC(6);" 'N' TO STOP"
760 REPEAT:O$=KEY$:UNTILQ$="Y"ORQ$="N
780 IFQ$="Y"THENGOTO14
790 END
1000 REM
1130 FORI=46856TO46983:READW:ROKCI,W:NF
XT
1131 DATA0,0,0,0,63,63,0,0
1132 DATA0,0,3,3,63,63,0,0
1133 DATA0,0,48,48,63,63,0,0
1134 DATA0,12,12,12,12,63,12,12
1135 DATA30,63,63,51,33,33,18,12
1146 DATA0,0,0,0,0,12,12,12
1147 DATA63,30,12,12,0,0,0,0

```

```

1148 DATA0,0,1,0,63,63,7,1
1149 DATA12,12,63,18,33,33,33,18
1150 DATA0,0,32,0,63,63,56,32
1151 DATA12,12,12,30,18,18,63,63
1152 DATA1,7,63,63,0,1,0,0
1153 DATA59,59,59,59,13,55,18,30
1154 DATA32,56,63,63,0,32,0,0
1155 DATA0,0,63,63,0,0,0,0
1156 DATA36,8,0,33,8,0,1,0
1200 PRINT:PRINT:PRINT
1201 PAPER0:INK1
1205 PRINTSPC(12)CHR$(4);CHR$(27)"NF(I)
TER":PRINTCHR$(4)
1210 PRINT:PRINT"SHOOT DOWN AS MANY ENF
MY AIRCRAFT"
1215 PRINT"AS YOU CAN BEFORE YOU RUN OUT
T OF FUEL"
1220 PRINT"OR MISSILES"
1230 PLOT12,14,"CONTROLS"
1235 PLOT12,16,"UP... (A)"
1240 PLOT12,17,"DOWN. (Z)"
1245 PLOT12,18,"RIGHT. (.)"
1250 PLOT12,19,"LEFT. (,)"
1255 PLOT12,20,"FIRE. (SPACE BAR)"
1260 PLOT10,10,"PRESS SPACE TO START"
1270 W$=KEY$
1275 IFW$=" "THENCLS:RETURN
1280 GOTO1270

```





CURRENTLY causing much consternation on the Big K campus is a deceptively tricky adventure called *Mountains of Ket*, from Incentive Software, which runs on a 48K Spectrum. This traditional text-only epic is the first of a proposed trilogy set in the mythical land of Ket, a familiar-sounding suburb full of Orcs, Ogres and other routine 'Obgoblins.



It boasts both a commendably strong plot and a pot full of puzzles that run a gamut of difficulty. Apparently Ket, long troubled by feuding warlords and the like, has been thrust into uncharacteristic unity by some attacks from beyond the mountains;

the work, it seems, of a band of mad, marauding monks. You've been summoned by the Lords of Ket to sort these beggars out. Some task! To ensure that you at least try to complete this hazardous mission, the Lords have kindly grafted Edgar, an assassin bug, into your neck. Try and do a bunk and the little devil will sink his poisoned pegs into your tender parts.

Despite the standard Sword & Sorcery format, *Ket* offers up a number of refreshing twists. Take the opening sequence for instance. As you saunter into the local village it's a fair bet that most players, conditioned by the senseless slaughter of similar games, will draw their swords and begin hacking away at the earliest opportunity. Here, however, such antisocial behaviour reaps its own rewards. The inhabitants will, as a man, set about you with ill-disguised glee. Better by far to sheathe your sword and attempt to barter. There are a number of items that can be bought, all of which will prove of use once you've entered the mountains. Although it must be said that with what appears to be a village inhabited solely by grumpy pensioners ("Speak up sonny, I'm a

little deaf!" and "I've no time for idle chatter!" being typical replies) it's extremely tempting to swing that sword and remove a few heads.

Although primarily a puzzle adventure the game features an effective combat routine based on the Dungeons and Dragons slugger system. Upon starting the game you'll be allocated points for Prowess, Energy and Luck, and these, come a punch-up, are compared against the statistics of your opponent. The 'puter then plays out the battle in a series of rounds. You're given a running commentary on the slashes and thrusts along with opportunities to either dodge or run. It's an effective and well presented routine that adds considerable punch (no pun intended) to the proceedings. As a general rule it's best to avoid crossing swords with those with a higher prowess rating. Just swallow your pride and do a runner; that way you'll get to see more of the game.

I'm currently stuck before a wall which I'm told is in 'mint condition'. The clue here is presumably 'Polo', so obviously (?) there's a hole in the wall somewhere. Just a question of sussing out where, I guess...

NOW SHOULD you be tired of all this D&D style adventuring Salamander Software offer an entertaining alternative in the shape of *Wings of War* (which runs on the Dragon 32/64). Set in France, circa WW2, you get to play an officer in some sort of secret task force who's (been) volunteered to infiltrate an occupied chateau. Apparently the krauts (no offense chaps) have developed a secret weapon and the Brits want it. The mission begins with a descent by parachute

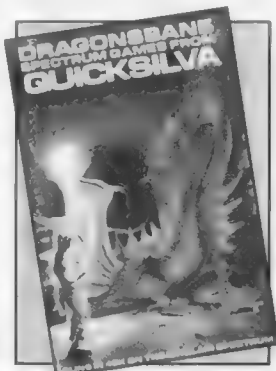


into the wood near the chateau. Unfortunately a rough landing scatters your equipment as you land. Not the best of omens.

## Steve Keaton's Adventure Column

*Wings* is a text adventure using a formatted display. On the left hand side of the screen is a description of your current location and on the right a list of all the items you're currently carrying. There's also a turn count and direction guide as well as a small scrolling input window. The adventure itself is pretty friendly. There seem to be no sudden death routines (thank goodness) and quiet humour abounds. While exploring one of the floors in the chateau I found myself in the commandant's office. Thinking quickly I typed in SAY HEIL HITLER and was dutifully awarded with a security pass. I then turned on my heels and promptly walked into a large cupboard. The commandant was

a 48K Spectrum from Quicksilver) is enormously impressive. It's a 'true' graphical adventure that thankfully doesn't involve zapping everything that moves, although I must confess that the plot is a little ho-hum. Trapped within Castle Earthstone you must outwit the

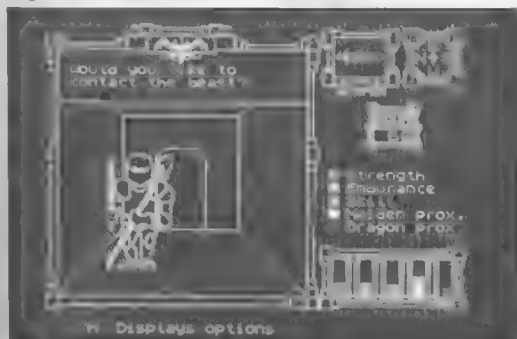


dead Dragon Lords and rescue the beautiful Princess Paula. Still the hoary old story is more than compensated for by a stylish presentation.

You move through the castle's great halls using the cursor keys, picking up artefacts and battling such hideous adversaries as vampires, ghouls and (shriek) giant pigeons. There are 12 locations to visit and 40 species of well-drawn monster to avoid, not to mention a brace of randomly generated trapdoors. It's a true graphic adventure.

only mildly amused. *Wings* is spiffing stuff and a sequel entitled *The White Cliffs of Dover* is promised soon.

I MUST confess to being generally nonplussed by the recent spate of hybrid arcade adventures. The likes of the chart-bustin' *Atic Atac* fall between too many stools for my taste. However, *Dragonsbane* (which runs on



### WHAT DO YOU THINK?

FINALLY, if you have any favourite adventures why not write in and tell us (a) what they are, and (b) why you like them. Perhaps you've unearthed some curious bugs you can share or maybe you're just plain stuck somewhere! Whatever the reason, write in. We wanna hear from you.

INCREDIBLE ANIMATION BROUGHT TO YOUR BASIC PROGRAMS

## SIMONSOFT SPRITES VERSION TWO

£12.95 for the BBC 32K  
£15.95 on 40 or 80 track disc  
£12.95 for the Electron (separate version)

An 18 FOLD INCREASE IN SPEED (BBC) of your own character designs makes this the FASTEST EVER screen movement seen in Basic programs. Amazing animation effects are available at a command yet no knowledge of machine code is required. This incredible extension to your machine's facilities is RAM based and your whole program can be SAVED/LOADED at the same time as the control coding and sprite images (your character designs). The designs and the control routine need take as little as 8600 15K! from the memory of your machine!

### LOOK AT THESE FEATURES

1. **SPRITE GENERATOR PROGRAMS** to create your own sprite designs. All 16 colours may be used in each design with characters as small as one pixel or as large as the 24 x 24 pixel SUPERSPRITE. As you design the sprites they are automatically stored in the machine code control routine so that you can delete the generator program before writing your own Basic.
2. **UP TO 48 SPRITES ON SCREEN** with 12 separate sprite designs each with 3 independently controlled clones.
3. **INSTANT ANIMATION** with two images in each sprite design. These are switched automatically as the sprite crosses the screen allowing effects such as hopping frogs, running men etc.
4. **COLLISION DETECTOR** with a hit flag that is set to the number of any sprite overlapping with the sprite just moved. When the sprites move apart there is no disruption of the sprite character designs.
5. **ENLARGEMENT FACILITY** of x2 x3, x4 x5 magnification of the sprite size! Let your invaders loom out of the screen in 3D effects - or use enlarged sprites throughout your program!
6. **FOUR PRESET FLIGHT PATHS** designed from the generator programs. Each path has 8 definable directions with up to 255 steps allowed in each direction. Once sprites have been allocated to a path they will move automatically as your program runs.
7. **Both EOR and TRANSFER** plotting of sprites to the screen are available.
8. **A SPRITE LIBRARY** has sprite designs ready for use in your programs with books such as GHOSTS and MEN.
9. **SPRITE POSITION COORDINATE VARIABLES** which are reset automatically by the control coding if the sprite crosses a screen boundary. As you move your designs the old images left behind are deleted automatically as well.

This amazing package includes control routines containing different combinations of the above features - choose the routine best suited to the program you want to write. A comprehensive colour manual, an introduction program and two arcade style demonstration games are also included in the package. Compatibility with all other BBC make our animation routines ideal for serious programmers and we won't claim royalties on programs you market using sprites!

NB Disc version may be bought on cassette for transferal to disc

**SUPERFRUIT** £5.95 for the BBC 32K, Electron

£8.95 on 40 or 80 track disc

Simply the best. Full colour high resolution graphics. Spinning reels with bounce incredible gamble effects. Hold 3 types of gamble swap reels two way nudge. Nudge gambles. Con pile that chinks grows. Great sound effects. Separate instruction program. This implementation is in a class of its own.

You would be fully justified in claiming that it is better than the real thing - M Field Oxford.

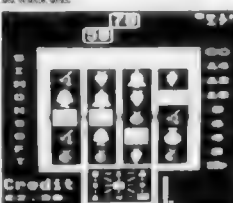


**CASTAWAY** £8.95 for the BBC 32K, Electron

£11.95 on disc

The Three Island Adventure

A beautifully designed adventure with a wealth of puzzles of logic, imagination and wit. Tackle beanstalks,irate gardeners and prish chemistry teachers! Brilliant use has been made of sound and Mode 7 graphics with full screen pictures. Set in varied terrain from sandunes to mansions, the adventure provides an exciting range of locations through which the castaway must pass in search of priceless treasure and cryptic clues.



Screen photograph

To order send cheque/P.O. to:

**SIMONSOFT, 25 TATHAM ROAD  
ABINGDON, OXON OX14 1QB  
TEL: 0235 24140**

**PROGRAMMERS - WE PAY 30% ROYALTIES FOR  
EXCELLENT PROGRAMS**

# **JOBS: Now the**

**STEVEN JOBS, along with a partner, founded Apple Computer ten years ago. Today he's worth a quarter of a billion dollars. PAUL WALTON spoke to the Man behind the trail-blazing Macintosh.**

STEVE JOBS sold his VW Beetle car and cancelled a visit to India back in '75 to start Apple Computer with his mate, a boffin called Steve Wozniak (featured in April issue of BIG K). It paid off. Apple's now a billion-dollar company and he owns about a quarter of it.

While it was Wozniak's idea to build the Apple II — that's since sold two million around the world — Jobs came up with the next bright idea. He's the man credited with bringing *mice* cursors, multiple *window* screens and *icons* — or visual representations of objects first to the Lisa and now to the cheaper Macintosh.

'I believe in giving people great products as cheaply as possible,' bubbles Jobs, as he outlines the 'goodies' up-and-coming from Apple in the near future. (See the box.)

Steve is twenty-eight years old, spends most of his life playing with computers, or improving his tennis. He dropped out of college to trek to India when he was 18 and is a vegetarian. Oh, and by the way, he's worth going on for 250 million dollars!

You've only got to listen to the things he says to know that Steve Jobs doesn't care what people think. Thanks to his success, he doesn't have to...

About promoting the Mac: 'If we could get a picture of the Queen using one, hell, I'm sure they'd sell. We're not a slogans company. Mac is supposed to be the computer for the rest of us, but royalty might help...'

**IBM want to crush us — they want us dead!**

About IBM, his major rivals: 'If it wasn't for us IBM would own all the PC market, though they don't deserve to. IBM just want to crush us — they want us dead!'

On computers generally: 'Most are just a load of junk. The game in computers is now over — software, games and leisure software, business packages, graphics... that's where it's at today. I wouldn't build an Apple II today, I'd write a neat piece of software.'

'We think there have been two standards in our industry — and that's all. The Apple II in '77 and the IBM PC in '81. The whole industry is converging on those two. We think that the Apple II operating system is a standard. There are more of them out there than any other computer in the world.'

'As you know, last year we achieved approximately \$1000

million revenue. That was primarily Apple II. But if we're going to be the major contributors in our industry and remain that throughout this decade — which we absolutely want to do — then we'll need \$10 billion.'

'But we aren't going to sell ten billion dollars worth of Apple IIs a year. The next major growth is going to be the Mac and that type of very advanced machine.'

'We want to sell tens of millions of computers per year. Per year!' he emphasised. 'These PCs won't resemble those we use today. They'll be sold for a few hundred pounds, will have immense storage and processing power and great graphics but the software's going to cost

a fortune. Expect to pay twice as much for a good package as you do today.'

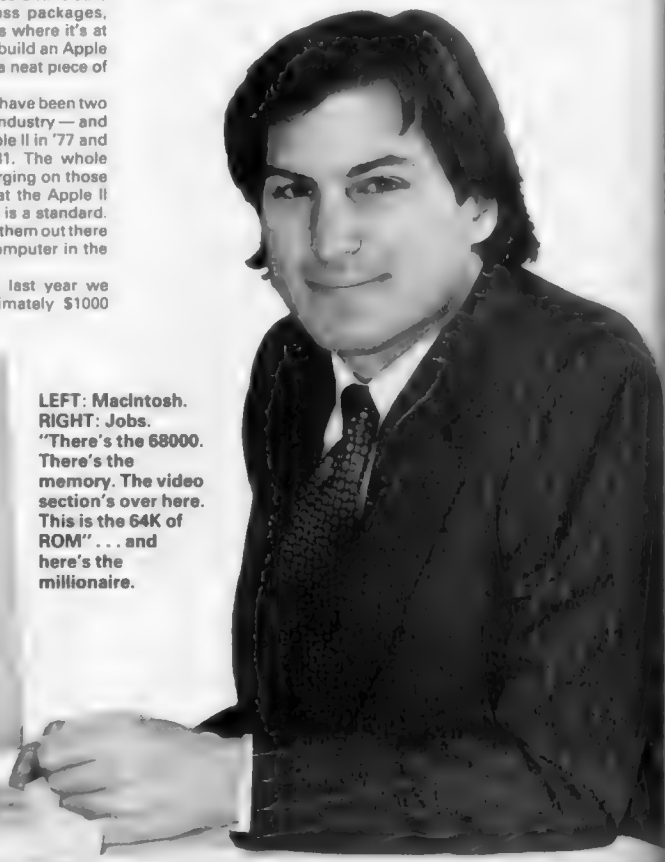
But Jobs doesn't think that most other computer suppliers will be around anyway. He thinks that by *next year* there'll only be the Apple II or the IBM PC selling in volume for businesses, or for the US home market. And then we'll see the age of the dream machine, like his Mac, which offer something a little different.

**Most computers are a load of junk**

The end of the PC as we know it, in 1984? 'Sure. Other people just slap together some random hardware, go buy an operating



LEFT: Macintosh.  
RIGHT: Jobs.  
'There's the 68000. There's the memory. The video section's over here. This is the 64K of ROM'... and here's the millionaire.





# megood news...

system from this or that person, languages from that same guy. They get a piece of junk. Which is what everyone's computer is. But IBM's going to kill most everybody out there. Between them and us there won't be anything else to choose from.'

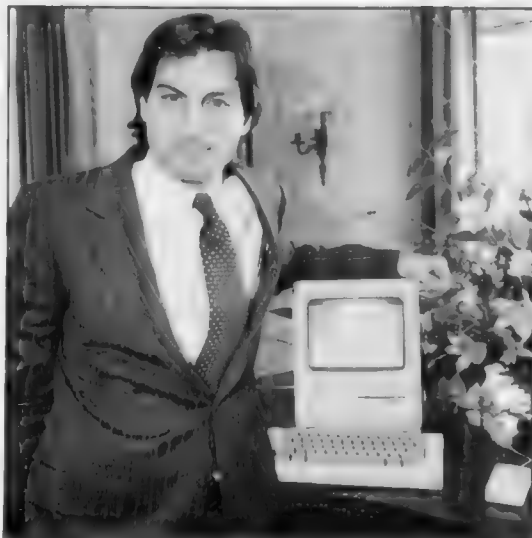
Jobs puts this all down to money — to being able to spend vast sums in developing and building cheap PCs. 'Remember that Apple are a \$1000 million corporation — so are IBM — in terms of personal computers. And there are things that mega-corporations can do that other people can't. Like we are spending over \$100 million this year on marketing, about \$100 million on R&D. As is IBM

'So if we all spend that money wisely how is anybody going to catch up with the Mac or whatever developments IBM has? They're not. So you see both companies are accelerating their investments in those two areas, not pulling back. And all this money, all those PCs already sold, allow Apple and IBM to do something unique.'

SOFTWARE, OR the ability to control its production, 'will be critical in 1984,' says Jobs. 'You have to conceive hundreds of software developers to write for your computers. Now these guys don't have the resources to write software for everybody's machines. So they're going to pick one or two. If they make the wrong decision — they'll be out of business

'So how do they make their decision? One simple criterion — installed base. And maybe not what it is today, but what will it be in a year. It's the only way that they can make money. There are only two computer companies that have installed base, IBM and Apple.'

What does all this mean for games houses? Jobs reckons that it means a choice between the mass-market, and ultimately



cheaper name-brand machines which IBM and Apple will flood in the millions. 'Other people aren't going to be able to run the software that's developed for our machines — it'll be very difficult. People don't quite realise it yet, but it's going to be quite apparent this year,' he said

There isn't much love lost between Apple and IBM. 'The IBM PC was the fourth personal computer they developed. So if that was the best of four... IBM has never been a product innovator. Their strategy is to corner the marketplace in what they do best — which is service, support and motherhood

'In the States there's a battle for hearts and mind that's going on between Apple and IBM. They just want to wipe us off the face of the earth. I think that that's not going to happen. They could buy us — but we're not for sale. We've been having too much fun. We're the only ones

that are going to survive IBM — I really do think that! They're just going to crush everybody else.'

## We're not for sale — we've been having too much fun

So, how does Apple plan to stay ahead? 'We don't design products that market research studies say we should design, that's for sure,' says Jobs. 'That's ridiculous. That's the IBM way!'

'We said that if we shipped 15,000 Macs in the first 100 days we'd be doing very well. It's been 65 days now — how many Macs do you think we've shipped? We've shipped over 40,000 — it's unbelievable. No computer start-ups ever been like this, ever, ever, ever,' enthused Jobs.

But what's the reception been like in America? And does he use it himself?

My problem is that I have a Mac at home — but I'm never there. You can't sell forty thousand of something in sixty days without some real use for it. It doesn't happen. We sell 'em \$2500 retail, so that's \$80 million — over a million dollars a day.'

What Apple did with Macintosh was to build a graphics-based machine cheaply, one which works by moving icons around the screen rather than juggling Basic commands in your head!

Jobs is so proud of his Mac that, half-way through the interview, he whips out the motherboard and gives BIG K a technical, guided tour... 'This is the complete Macintosh digital section,' he explains. 'This is the complete 32-bit graphics processing digital computer on one board.'

'There's the 68000. There's the memory. The video section's over here. This is the 64K bytes of ROM. A lot of custom VLSI is in these ROMs. We also have a custom VLSI Disc Controller chip. This is an incredible serial chip which gives up 2 megabits per second serial channels out of the back. Here's the extra display port. We have a full serial mouse, and a serial keyboard. We have a clock/calendar with parameter memory that is battery backed-up. We have four voice sound and speech built into the product.

'I mean, it's incredible what's on this board. And this is 20 per cent of the parts of an IBM PC. An IBM PC has five times the number of parts and is far less powerful. It does not include many of the features of this board.

'You add up all these things, and the number of companies that can do all of them — or even half of them — is only one. That's IBM. And the question is, when will they do it? The answer is, I don't know. I think it'll be two or three years away.'

## APPLE'S NEXT PRODUCTS

This year Apple will launch new members of the Apple II family ('We're spending as much on R&D for the Apple family as we are on the Mac in 1984'), as well as major peripherals and software.

A luggable Apple IIe is coming. 'Really hot stuff — something to keep ACT up nights,' with 256K of memory for under \$1,000. But that's just the beginning for the old 6502-family. There is a 512K Apple Iie being built with further extended Apple DOS

which will be truly portable, due for release in 1985.

The Apple II is getting more of the Mac-like features, or windows and icons, to go with the mouse cursor just added. 'We can give Apple II owners a taste of what is to come, and it will be fun.'

It has also been rumoured that Steve Wozniak, lately returned to Apple, is working on a project codenamed Apple V — a hard disc Apple II to match the IBM PC.XT.

In time there'll be a fully portable Mac. 'I want to put Macintosh inside a book in

three years, or before, with a flat screen display, mass memory chips... that's one of the reasons we chose a three and a half inch disc drive. It's very small, uses less power. It weighs less. The whole thing might one day fit into a shirt pocket.'

There will be a portable laser printer for under \$5000 (or around £3000), for the first time being 'standalone' and capable of working with any make of PC, which Jobs describes as 'an incredible breakthrough in laser printing'. 'It prints anything to high definition at a speedy

eight A4 pages a minute. It's just awesome.'

And there will also be the launch of APPLEBUS, Apple's local area network

And on the software front? 'We have two programming languages that we're working on — also be out in the summer — Pascal and Basic,' said Jobs. 'You'll use windows, be able to incorporate graphics in your program. Universities have been going wild at that. Microsoft has their own Basic output — ours is substantially better. You can write a whole bunch of programs at once.'



# COMPETITION • COMPETITION • COMPETITION • COMPETITION •

All you need is imagination... this issue's **BIG KOMPETITION** gives you everything else you need to start computing!

## WIN a CGL M5 STARTER PACK!

17 Runner-up prizes of **GAME & WATCH MULTI-SCREEN PINBALL** pocket games!



**RUNNERS-UP** have no fear! 17 brilliant little Game & Watch Multi-Screen pocket Pinball games are waiting. Now you can carry a game of pinballs anywhere. A stylish fold-open black case contains two LCD screens across which the game is played. Two buttons operate the flippers, there's a high score display, clock and alarm functions, two skill levels, colour graphics, sound — and more.

### RULES

There is no entry fee but all entries must be on a proper printed coupon cut from BIG K and must bear the entrant's own name, age and address.

Every accepted entry will be examined and the First Prize awarded to the entrant who, in the opinion of the judges, has shown the most skill and judgment in placing the listed factors in the order of appeal to a novice computer user. Remaining prizes will be awarded for the next best entries in order of merit. No entrant may win more than one award.

In the event of a tie or ties for any prize then a further test of skill will be conducted by post between tying competitors to determine the eventual winners or winning order.

All prizes must be accepted as offered. If any winner is aged under 18 then parental consent must be provided before the prize can be awarded.

Any entry received after the closing date will be disqualified as will any received mutilated, illegible, altered, incomplete or not complying with the rules and instructions exactly. No responsibility can be accepted for entries lost or delayed in the post or elsewhere. Proof of posting will not be accepted as proof of receipt.

The judges' decision and that of the Editor in all other matters affecting the competition will be final and legally binding. No correspondence can be entered into.

The competition is open to all readers in Great Britain, Northern Ireland, Eire, the Channel Islands and Isle of Man except employees and their families of IPC Magazines Ltd, the printers of BIG K and Computer Games Limited. All winners will be notified and the result published later in BIG K.

### ENTRY COUPON

#### BIG K CGL COMPETITION

1	2	3	4	5	6	7	8

In entering this competition I agree to abide by the rules and to accept the published result as final and legally binding.

Name ..... Age .....

Address .....

PLEASE CUT NEATLY AROUND THIS LINE.

BASIC - G



Pick up a pack and start programming! BIG K's top prize this month is a superb CGL M5 Home Computer Starter Pack containing all of the following:

**M5 COMPUTER • CASSETTE DATA STORAGE UNIT • 'BASIC-I' ROM CARTRIDGE • MANUAL AND USER GUIDE • 2 CASSETTE GAMES • ALL NECESSARY CABLES • MAINS ADAPTOR • PLUS! 'BASIC-G' ROM CARTRIDGE AND MANUAL**

No shopping around for bits and pieces, you just plug it in and you're away.

The M5 is a great computer for beginners (check out the features below) and BIG K's top prize comes complete with a 'Basic-I' Introduction to Programming cartridge AND the acclaimed 'Basic-G' Special Graphics Programming cartridge. Enter the competition now — we've only got one of these fantastic M5 Starter Packs to give away.

## How to Enter

Listed below are eight features of the M5 with 'Basic-G' cartridge, all factors which help make this computer so exciting to use. All you have to do is place them in the order you consider they would most appeal to a novice computer user.

Write the key letters of the eight factors — in ink — in the spaces on the entry coupon. For example, if you think that "screen buffers for animated graphics" would be the most appealing then put 'D' in the first space. The letter of your next choice goes in the second space, and so on for all eight.

Complete the coupon with your name, age and address and post your entry to **BIG K CGL COMPETITION, 55 EWER STREET, LONDON SE9 6YP**, to arrive by the closing date — **Tuesday 31st July 1984**.

### HOW DO YOU RATE THESE FEATURES OF THE CGL M5 COMPUTER WITH BASIC-G?

- A. CONTROL CODES FOR EASY SCREEN SCROLLING
- B. 32 MULTI-COLOUR SPRITES FOR GAMES
- C. 224 USER-DEFINABLE CHARACTERS
- D. SCREEN BUFFERS FOR ANIMATED GRAPHICS
- E. 6 OCTAVE 3-CHANNEL SOUND WITH ENVELOPES
- J. SCREEN DISPLAY CAN BE SAVED TO TAPE
- K. VERIFIED SAVING FOR EASE OF MIND
- L. 4 DISPLAY MODES AND 16 AVAILABLE COLOURS

COMPETITION • COMPETITION • COMPETITION • COMPETITION •

CheetahSoft

Soft we're not

FOR SPECTRUM 48K



## CONQUEST

**CONQUEST** A tactical game which even veteran players will find both challenging and rewarding.

Mediterranean Europe is divided into grid squares. Your aim, as Emperor, is to gain 100 squares of territory as quickly as possible - at the same time dealing with Barbarian counter-attacks, plagues, civil war and rival Emperors.

5 levels of skill, plus a continuous 'Conquest' game where all the difficulty levels are thrown in together.

**3D BAT ATTACK** An all action, 3 dimensional maze game where you gather up blocks of gold, at the same time pitting your wits against vicious vampire bats whose only purpose in life is to locate, hunt and kill you.

4 levels of skill. At each level the game gets faster and more complicated, and the vampires more dangerous.

CheetahSoft

Soft we're not

FOR SPECTRUM 48K



## 3D BAT ATTACK

# AFTER THESE, THE REST IS KIDS STUFF.

Are you ready for CheetahSoft?

There's only one way to find out. But be warned: these vampire bats know a good meal when they see one. And our friend with the scythe has had years of experience...

CheetahSoft

Soft we're not

So don't play unless you're ready to play the game for real. Because you'll find there's one sure thing about CheetahSoft: Soft we're not.

£6.95 at all good stores.



Also available by sending cheque/P.O. for £6.95p to:  
CHEETAH SOFT LTD., 24 Ray Street, London EC1 Tel: 01-833 4733



# Go hunting with **CAESAR THE CAT**

## MIRRORSOFT

### SOFTWARE FOR ALL THE FAMILY



To MIRRORSOFT, PO Box 50, Bromley,  
Kent BR2 9TT  
Please send me the following (enter  
number required of each item  
in the space provided):

Caesar the Cat (CC01)  
Caesar the Cat (CC01)

Price	Spectrum 48K (01)	BBC B (03)	Electron (04)	IBM 64 (05)
£8.95				
£6.95				

I enclose a cheque/PO for £  
to "Readers' Account: Mirror Group  
Newspapers Ltd".  
I understand that my remittance will be held on my  
behalf in the  
bank account  
named above  
until the  
goods are  
despatched

Or please debit my ACCESS/BARCLAYCARD for the sum of

£ card no.

Signature

Name

Address

Postcode

Offer applies to Great Britain and Ireland only. Please allow up to 28 days for delivery in the UK. MIRRORSOFT is a registered trade mark of Mirror Group Newspapers Ltd. Co. Reg. No. 108860. Reg. Office: Holborn Circus, London EC1

BK1



# DISCOUNT SOFTWARE SUPPLIES

8 PORTLAND ROAD LONDON W11 4LA 01-221 1473

**AMAZING SOFTWARE BARGAINS BY MAIL. 100's OF TITLES AVAILABLE!  
TELEPHONE ORDERS WELCOME. WRITE OR RING NOW FOR FULL DETAILS**

Game	Supplier	RRP Inc. VAT	Our Price Inc. VAT	Game	Supplier	RRP Inc. VAT	Our Price Inc. VAT
<b>SPECTRUM</b>				<b>JET PAC</b>	Ultimate	5.50	4.75
CHUCKIE EGG	AAF	6.90	5.90	<b>SNOOKER</b>	Visions	8.95	6.95
FOOTBALL MANAGER	Addictive	6.95	5.95	<b>COMMODORE 64</b>			
GALAXIONS	Artic	4.95	3.95	FLIGHT SIMULATOR	Anger Prods	9.95	8.95
PIMANIA	Automata	10.00	9.00	3D TIME TREK	Anirag	5.95	4.95
PI-BALLED	Automata	6.00	4.50	SKRAMBLE 64	Anirag	7.95	6.95
GO TO JAIL	Automata	6.00	4.50	KONG 64	Anirag	7.95	6.95
PSYTRON	Beyond	7.95	6.95	MOON BUGGY	Anirag	7.95	6.95
TEST MATCH	CRL	5.95	4.95	SPACE PILOT	Anirag	7.95	6.95
OMEGA RUN	CRL	5.95	4.95	CYBOTRON	Anirag	7.95	6.95
OLYMPICS	CRL	5.95	4.95	TWIN KINGDOM VALLEY	Bug-Byte	9.50	8.50
HALL OF THINGS	Crystal	7.50	6.50	DERBY DAY	CRL	7.95	6.95
ROMMEL'S REVENGE	Crystal	6.50	5.50	SCUBA DIVE	Durell	6.95	5.95
FIGHTER PILOT	Digital	7.95	6.95	THE PYRAMID	Fantasy	6.50	5.00
NIGHT GUNNER	Digital	6.95	5.95	DEFENDER 64	Interceptor	7.00	5.00
SEA HARRIER ATTACK	Durell	5.95	4.95	ASSEMBLER 64	Interceptor	7.00	5.00
JUNGLE TROUBLE	Durell	5.95	4.95	CHINA MINA	Legend	14.95	11.95
SCUBA	Durell	5.95	4.95	VALHALLA	Llarnasoft	7.50	6.50
THE ALCHEMIST	Imagine	5.50	4.75	REVENGE OF MUTANT CAMELS	Llarnasoft	5.00	4.00
PEDRO	Imagine	5.50	4.75	HELLGATE	Melbourne House	14.95	12.95
SPLAT	Incentive	5.50	4.75	THE HOBBIT & BOOK	Ocean	6.90	5.90
VALHALLA	LEGEND	14.95	11.95	HUNCHBACK	Peak Soft	8.95	7.95
PARAS	Lothlorien	5.95	4.95	THE BOSS	Tasksoft	6.90	5.90
SABER WOLF	Ultimate	9.95	8.95	SUPERPIPELINE	Tasksoft	6.90	5.90
MUGSY	Melbourne House	6.95	5.95	BOZO	Visions	8.95	7.95
ABERSOFT FORTH	Micromega	14.95	11.95	SNOOKER	Access	9.95	8.95
CODE NAME MAT	New Gen	5.95	4.95	BEACH HEAD	Software Pro	7.95	6.95
TRASHMAN	Ocean	5.30	4.90	<b>BBC</b>			
MR. WIMPY	Ocean	6.90	5.90	FOOTBALL MANAGER	Addictive	7.95	5.95
HUNCHBACK	Ocean	5.90	4.90	BLAGGER	Alligata	7.95	6.95
ESKIMO EDDIE	Ocean	5.90	4.90	TWIN KINGDOM VALLEY	Bug-Byte	9.50	7.50
POGO	Ocean	5.90	4.90	GHOUL	Micropower	7.95	6.95
BLADE ALLEY	PSS	5.95	4.95	KILLER GORILLA	Program Power	7.95	6.95
SCRABBLE	Pison	15.99	13.00	<b>ELECTRON</b>			
FLIGHT SIMULATION	Pison	7.95	6.95	BLAGGER	Alligata	7.95	5.50
CHEQUERED FLAG	Pison	6.95	5.95	TWIN KINGDOM VALLEY	Bug-Byte	9.50	6.78
3D ANT ATTACK	Quicksilver	6.95	5.95	BANDITS AT 8 O'CLOCK	Micropower	7.95	5.95
BUGABO THE FLEA	Quicksilver	6.95	5.95	SNOOKER	Visions	8.95	6.95
THE SNOWMAN	Quicksilver	6.95	5.95	DARE DEVIL DENNIS	Visions	7.95	5.50
FRED	Quicksilver	6.95	5.95	<b>ORIC</b>			
BLUE THUNDER	R. Wilcox	5.50	4.50	SEA HARRIER ATTACK	Durell	6.95	5.95
MANIC MINER	Software Pro.	5.95	5.00	SCUBA	Durell	6.95	5.95
JETSET WILLY	Software Pro.	5.95	5.00	XENON	UK	8.50	6.50
ATIC ATAC	Ultimate	5.50	4.50	ZORGONS REVENGE	UK	7.50	5.50
SNOOKER	Visions	8.95	7.95	PROBE 3	UK	7.50	5.50
SHEER PANIC	Visions	5.95	4.95	THE HOBBIT & BOOK	Melbourne House	14.95	12.95
<b>VIC 20</b>				DINKY KONG	Seymour Soft	6.95	4.95
FROGRUN	Anirag	5.95	4.95	DRACULAR'S REVENGE	Softtek	6.95	5.95
KRAZY KONG	Anirag	7.95	6.95	ULTIMATE ZONE	Tansoft	8.50	6.50
3D TIME TREK	Anirag	5.95	4.95	RAT SPLAT	Tansoft	7.95	5.95
SKRAMBLE	Anirag	7.95	6.95	<b>ZX81</b>			
DARK DUNGEONS	Anirag	5.95	4.95	FOOTBALL MANAGER	Addictive	5.95	4.95
DRACULA LOST IN THE DARK	Anirag	5.95	4.95	PIMANIA	Automata	5.00	4.00
FLIGHT ZERO ONE FIVE	AVS	5.95	4.95	PILOT	Hewson	5.95	4.95
ARCADIA	Imagine	5.50	4.75	OS SCRAMBLE	Quicksilver	3.95	3.40
HELLGATE	Llarnasoft	8.00	4.75	49er	Software Farm	5.95	4.95
WIZARD AND PRINCESS	Melbourne House	5.95	4.95				
SKYHAWK	Quicksilver	7.95	6.95				
SPACE JOUST	Software Pro.	5.95	4.95				
MUNCHMAN	Solar	5.00	4.00				

## SPECIAL OFFERS FOR THE SPECTRUM

THE HOBBIT AND BOOK

H.U.R.G.

THE QUILL

By Melbourne House

By Melbourne House

By Gilsott

RRP

14.95

14.95

14.95

Our Price

10.95

11.95

11.95

TO DISCOUNT SOFTWARE SUPPLIES PLEASE ACCEPT MY ORDER FOR THE FOLLOWING PROGRAMS/SPECIAL OFFERS

1. ....
2. ....
3. ....
4. ....
5. ....

Make cheques payable to Discount Software Supplies

Cheque No. .... For £..... enclosed

Please debit my Access/Barclaycard

No. .... Signed.....

**DSS** DISCOUNT SOFTWARE SUPPLIES  
8 PORTLAND ROAD LONDON W11 4LA 01-221 1473

SEND

Name .....

Address .....

SEND S.A.E. FOR UP TO DATE LIST OF OUR AMAZING BARGAINS



### **HERO WANTED**

To undertake seemingly impossible rescue mission deep within the bowels of the Earth. No pay. Long hours. Mind-bogglingly hazardous work. Precious little chance of survival. Interested?

**Only real heroes need apply.**

Designed by John van Ryzin  
for the Atari 2600,  
Atari home computers;  
Colecovision, Commodore 64  
cassette and disk.

**H · E · R · O ·**

 **ACTIVISION.**

H.E.R.O. is a registered trade mark of  
Activision International Inc.



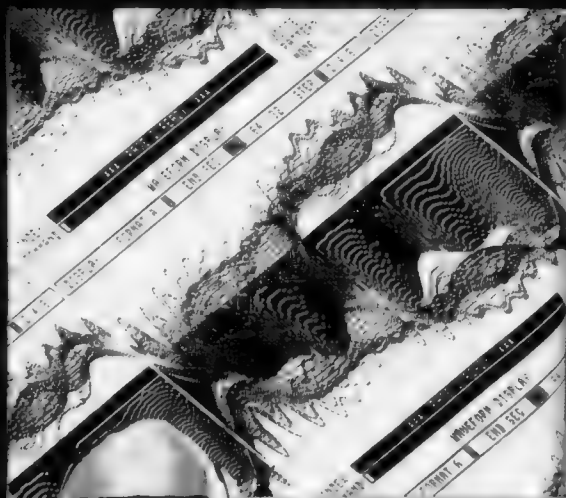




As regular graphics begin to reach their limit on existing microcomputers, creative hackers given to whistling in the bath are turning en masse to the growing potential of computerised music. And the technologies are coming together, too. 'Q' — BIG K's own mystery musician — brings us up to date with the new creative possibilities (and raps our knuckles when we don't learn our scales).

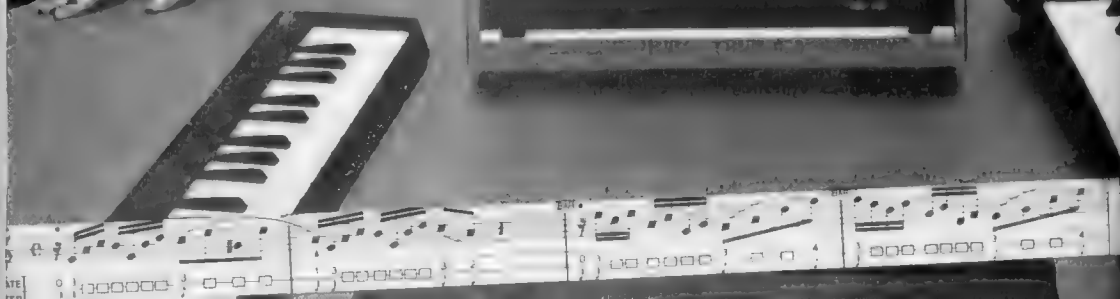
All together now...

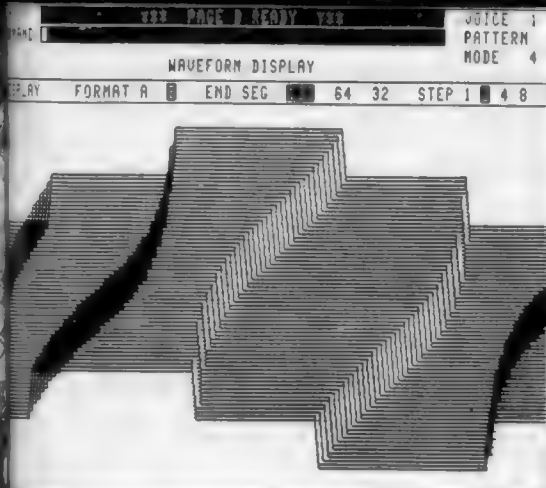
# Music, Maestro. Please



IF YOU'VE ever tried to make music with your mic, you probably know that it's OK for squeaking 'Happy Birthday' but there's just no way it can be used for making 12 inch re-mixes. This is

"Q" posing with Yamaha and "Nuevo Zorro" street goggles. Levis are optional.





*The Hills Are Alive... with the Shape of Music! Some of the screens from the Fairlight display.*

because most micros only use sound to enhance games.

The good news is MIDI which stands for Musical Instrument Digital Interface, and what it means is that music making with your micro has jumped into hyperspace.

Within the next year new MIDI-compatible hardware is going to hit the streets, and in comparison with the cost of Fairlights and Synclaviers (more about them later) at £25,000-£40,000 a throw, this hardware is going to be relatively cheap (prices start around £400). This means that you'll be able to create music on your micro by using MIDI interfaceable hardware and that you will be also be able to run your micro with the BIGGO systems and take advantage of all the latest hardware... drool, drool.

More good news is that some of this new hardware is already available. If you've got a Commodore 64 (hopefully adaptors will become available for Spectrums, Dragons etc) and it is MIDI interfaceable, you'll be able to use a number of MIDI compatible synths on the market.

The problem is that there does not seem to be a lot of software around at the moment so all you hackers out there had better start writing some! Another problem is that not all hard-

ware manufacturers seem to actually know what's going on! Some people have started making MIDI interfaces for some popular synths so that you can hook them up to each other and to micros. The people to

contact with regard to this are Syn Systems — see address at end of article. Hopefully some of you bright sparks will design a bit of hardware which Big K's readers could build cheaply while interfaces for popular micros are still thin on the ground).

**SYNTH HARDWARE** falls into various categories. The first (historically speaking) is the knob-twiddlers' analogue stuff which uses oscillators to create sounds, and modifies them with filters and such like. These synths are either Mono or Polyphonic (single or multiple 'voices'). Most of the older equipment is unable to store made up sounds in a memory, but most of the new

synths (like the Prophet 5) enable you to make up sounds and store them and some even have cassette interface for large scale storage.

The makers of the Prophet 5 Sequential Circuits were one of the driving forces behind the original MIDI concept, and they have new models of MIDI controllable analogue synths. Analogue synths produce most of the 'Kraftwerk' types of sound and are relatively easy to operate, but also (with the exception of strings) tend to produce a 'synthy' sort of sound which seems artificial to a lot of people. Analogue synths (with their brethren the designated soundchip synths) are the first generation of mass appeal music machines.

### Built-in

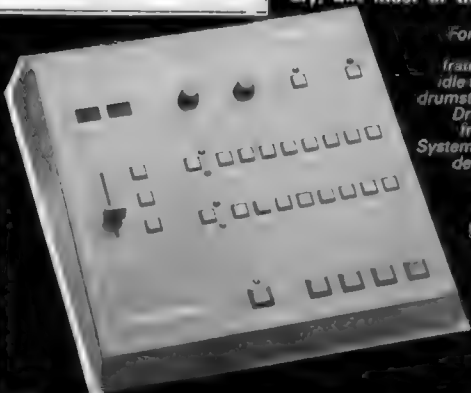
Some of the newer popular synths have built in drum machines and most manufacturers produce drum machines for their own range of models, but there can be problems when trying to hook up the sequencer section of a synth to another manufacturer's drum machine (often the control voltages differ greatly). In this area the new MIDI compatible equipment will be much easier to use though problems are still being sorted out because the standard is so new. So always check equipment before buying.

The sort of equipment outlined — while not producing the most electrifying of sounds — will (when MIDI compatible) enable you and your micro to make some very respectable-sounding music.

The second category of synths are the digital synths and they tend to be very expensive at the moment. This is because of the big memory that is required to store and manipulate sounds digitally. Drum sounds are short, and so digital drum machine are relatively cheaper than music-making digital synths.

One of the first of this type of machine was the Linn Drum and most of the machines on the market seem to follow similar principles of design. The sounds are stored on EPROM and a micro processor enables you to program sequences. The

*For the foot-tapping fraternity too idle to wave a drumstick — the Drumulator from E-Mu Systems. It's the descendant of those rhythm boxes of yore but does it swing?*



*The Roland MSQ-700 Digital Sequencer. More than a watchmaker's more buttons than a hairdresser's. Making use of this particular widget, the aspiring Lloyd Webber types can make playing, with oneself into an Art Form. And no, it won't make tea.*

ware manufacturers seem to actually know what's going on! Some people have started making MIDI interfaces for some popular synths so that you can hook them up to each other and to micros. The people to





**MUSIC  
MAESTRO  
PLEASE**  
Continued

The all-Australian Fab Fairlight, rather more up-market than your actual dogardine. It "samples" sounds than reproduces them digitally; after which, using special disc-based software, it "treats" them. Pricy, though.



ABOVE: The Yamaha DX7. Sequencer: Algorithm Syn.

advantage of these machines over their cousins (analogue drum machines) is that the sound chips are digital recordings of real drums and since many new machines have great 'pitch control' some really amazing sounds can be created and programmed.

Programs may also be stored on cassette. Although many use various sync systems to enable them to be played with some types of synth not many are at present MIDI interfaceable, though this should change quite soon.

## Digital

Other major types of digital synth are those that sample (i.e. record) and manipulate sounds digitally. One of the most popular is the Emulator... that's the one you tend to hear most of on Top of the Pops. Basically these synths digitally record (using microphone or direct input) any sound and transposition it to a keyboard in either mono or polyphonic mode. They also enable you to create your own library of sounds on floppy disc. Even more advanced are the PPG's, Synclaviers and Fairlights — instruments that enable you to digitally record sound and then to manipulate and combine sounds with the aid of special software. These synths also enable you to compose by storing sequences of notes and allow you to edit these sequences together.



These machines are the most advanced and thus the most expensive but since most will be MIDI compatible it will be possible to write a program for a piece of music on your micro — and then be able to interface your micro with these 'super' synths in a recording studio. These are the instruments that are now being used extensively to create the new, clean, heavily produced music that is in the pop charts. When used with the latest digital desks and tape recorders truly amazing sounds can be created. It is worth noting that very few records have real drummers anymore and that lots of really 'natural' horns, strings and even human voices are being produced by these new digital machines.

Another category of sound creation that is now available is called FM Synthesis. This system is being developed by Yamaha for their new range of synths, and while being more complex to use (because the parameters of sound creation are larger) produce very 'clean' sounds that are often very 'natural' sounding. They use ROM plug-in cartridges for sound storage. These new Yamaha synths are MIDI compatible but beware! Many players used to the advantages of instant sound modification of analogue synths find sound creation on these new synths a bit laborious; so try before you buy. As well as these keyboard synths Yamaha are bringing out a micro speci-

LEFT: The Roland MC-302 Sequencer. Using the MIDI compatible interface — a sort of musician's MSX Basic — all these gadgets and another slew yet to arrive will (hopefully) be linkable with even your average domestic micro. Then... at your heart but, Andre Previni!

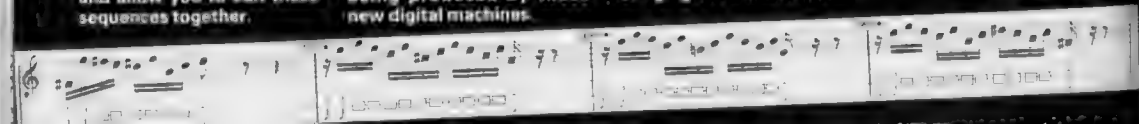
cally aimed at music making which uses the same plug-in ROM as their keyboards.

If you've been watching TV lately you will have noticed a thing called a Fairlight CMI (computer musical instrument). It's been featured in a number of music related programmes. This beast is in a class all of its own (though some might argue otherwise) so I thought we'd go into some more detail on this lovely (hands off!) expensive bit of Australian hardware.

Australian? Yep, that's right. The Fairlight comes from Down Under and legend has it that around 1975-1976 two young hackers were working on a missile guidance computer when they decided that they could also use the machine to make music... well, they left their missile-guiding and had their first Fairlight on the market by 1979.

The design philosophy on this machine is such that it is constantly software and hardware updatable and to this end they have a huge staff working on software (which is remarkably bug free) and have updated hardware periodically.

Continued on page 81





# The future's all in the cards.

You're looking at the PC 100. The last word in portable keyboards from Yamaha.

Part organ, part computer, it's designed around the revolutionary "Playcard" system. That is, a vast library of popular tunes with magnetic memory strips along the base. Simply slide these strips across the PC 100's "electronic brain" and in a split-second the entire score is memorised, ready to be played back at any speed, rhythm or instrument voice you choose.

Even if you've never played before, you can soon learn a tune by following "melody lights" above the notes, while the "free-tempo" facility means that the music will wait for you to catch up, until you can play it, note-perfect. Right up to the most advanced players, the PC 100 offers virtually limitless scope for entertainment, education and invention. Try

the Yamaha PC 100 for yourself. If you've never thought you could play, you've never thought of the playcard.

## FEATURES INCLUDE:

- Ten authentic instrument voices.
- Ten popular rhythms.
- Melody lights and "Free-Tempo" playback.
- Single-finger bass, sustain and arpeggio facility.
- Rhythm, bass and chord accompaniments.
- Mains and car-battery connection.
- Headphone and auxiliary outputs and expression pedal.

### To qualify for your **FREE YAMAHA PLAYCARD PACK AND POWER ADAPTOR**

(worth around £13.00) please attach proof of purchase to this coupon and send together to

YAMAHA SPECIAL PRODUCTS DIVISION  
MOUNT AVENUE, BLETCHLEY, MILTON KEYNES,  
BUCKS MK1 1JE Tel. 0908 640202  
24 hr Ansaphone 0908 649222



Name \_\_\_\_\_  
Address \_\_\_\_\_

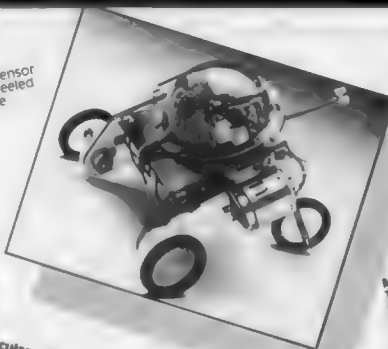


**YAMAHA**

BK 7 84



**Live Tracer II £17.99**  
Draw a line and the infra red sensor picks it up and sends this 5 wheeled twin motored robot along the course you plot



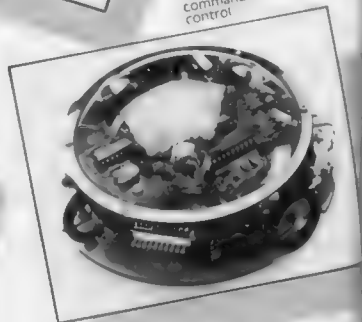
**Piper Mouse £19.99**  
Supersonic sound sensor picks up the sound to send the Piper Mouse scurrying where you want to go



**Monkey £29.99**  
A command from you into the condenser microphone activates the gripper arms and sends the Monkey climbing along its rope



**Circular £29.99**  
Through its own hand held remote control you issue instructions to the two independently driven wheels - sending the circular wherever you want it to go



**Memocon Crawler £34.99**  
This highly intelligent Movit is programmed through its own keyboard - its impressive menu accepts a broad range of commands and gives you complete control

# MASTER A MOVIT -THE MAKING IS Q

**A**re you ready to take on the challenge? When you open up a MOVIT box, you move into the exciting new world of robots.

Everything from the printed circuit board to the motors are included, just waiting for you to make a start. And the detailed instructions take you through each stage of this new adventure.

To create this new generation of robot models all you need is a screwdriver and a knife.

What's more, MOVITS cost a lot less than you might think. In fact, the price is the only thing about them that's down-to-earth!

MOVITS all have their own characters and appeal. They're fun to put together, fun to run. Take your first step into the world of serious robotics. Send off for your MOVITS today.



£19.99  
and sensor activation  
microphone dial  
send the Piper  
where you want

£34.99  
MOVIT is  
with its own  
passive memon  
age of  
es you complete



# ONLY THE BEGINNING

## PRISM

MOVITS - THE CHALLENGE CONTINUES

**Prism Consumer Products Limited**  
Prism House, 18-29 Mora St.,  
London EC1V 8BT  
Telephone: 01-253 2277

Please send me my MOVIT(S) straight away  
I enclose my cheque for £ \_\_\_\_\_ payable to Prism Consumer Products  
(add £2.95 p&p for one MOVIT and £1.00 extra for each subsequent MOVIT)

Name \_\_\_\_\_ Address \_\_\_\_\_

☐ LINE TRACER II @ £17.99 ☐ PIPER MOUSE @ £19.99

☐ MEMOCON CRAWLER @ £34.99 ☐ MONKEY @ £9.99

☐ CIRCULAR @ £29.99

Enter number of MOVITS required in boxes above.  
Allow 28 days for delivery. All prices include VAT.  
Batteries not included. Dealer enquiries welcome.  
Send your cheque to: **Movit Offer Prism Consumer Products**, Prism  
House, 18-29 Mora Street, London EC1V 8BT.

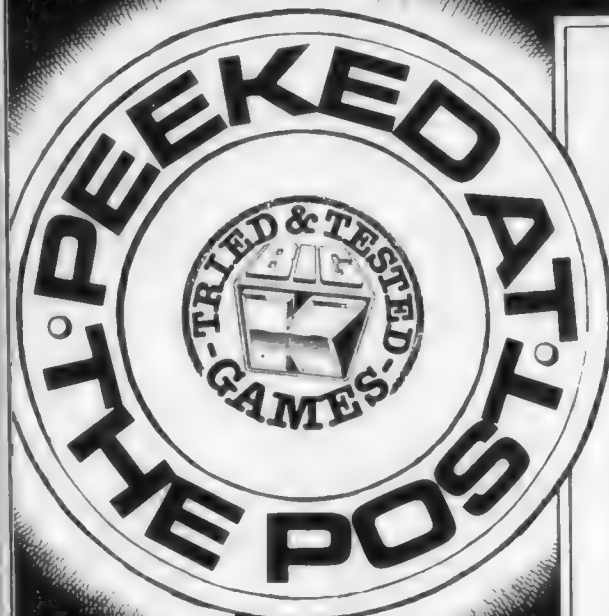
# THE DEADLY TUNNELS OF ZARNON



by Micheal Beaton for SPECTRUM







for COMMODORE 64  
by RICHARD PREEDY

And at the last fence it's 2-Player Game from Choose a Horse out of a List of 5. Place a Bet is coming up strongly on the outside of Up To £1000 Per Game. Also making a good showing is After Players' Selection only a nose in front of Race Starts. Random Movement fell at the start of this seven-jump course.

```

1 PRINT"J" F=1000 O=1000
2 POKE 53281:O POKE 53280:O
3 GOTO 360
4 B=1364 H=1264 C=1344
5 D=1364 E=1424
10 PRINT"OK" THE NATIONAL BY R.I.
15 PRINT"ORDER" UNDER STARTERS
16 PRINT"OK"
20 PRINT"OK"
30 PRINT"OK"
40 PRINT"OK"
50 PRINT"OK"
60 PRINT"OK"
70 PRINT"OK"
80 PRINT"OK"
90 PRINT"OK"
100 PRINT"OK"
110 PRINT"OK"
120 PRINT"OK"
130 PRINT"OK"
140 PRINT"OK"

```



```

150 PRINT "H"
160 PRINT "I"
170 PRINT "S"
180 PRINT "H"
190 PRINT "I"
200 PRINT "+++++ AND THEY'RE OFF"
202 FOR L=1 TO 1000 NEXT
  PRINT "AND THEY'RE OFF"
203 FOR L=1 TO 1000 NEXT
  PRINT "AND THEY'RE OFF"
205 POKE A:222:POKE B:222:POKE C:222
  POKE D:222:POKE E:222
210 IF INT(RND(1)*6)=0 THEN A=A+1
  POKE A-1:160 IF PEEK(A)=230 THEN
  A=A+1:GOTO 250
211 IF INT(RND(1)*6)=1 THEN B=B+1
  POKE B-1:160 IF PEEK(B)=230 THEN
  B=B+1:GOTO 260
212 IF INT(RND(1)*6)=2 THEN C=C+1
  POKE C-1:160 IF PEEK(C)=230 THEN
  C=C+1:GOTO 270
213 IF INT(RND(1)*6)=3 THEN D=D+1
  POKE D-1:160 IF PEEK(D)=230 THEN
  D=D+1:GOTO 280
214 IF INT(RND(1)*6)=4 THEN E=E+1
  POKE E-1:160 IF PEEK(E)=230 THEN
  E=E+1:GOTO 290
215 IF PEEK(A)=220 THEN A=1664
  POKE A:222
216 IF PEEK(B)=220 THEN B=1704
  POKE B:222

```

```

217 IF PEEK(C)=220 THEN C=1744
  POKE C:222
218 IF PEEK(D)=220 THEN D=1784
  POKE D:222
219 IF PEEK(E)=220 THEN E=1824
  POKE E:222
220 IF PEEK(A)=134 THEN 310
221 IF PEEK(B)=137 THEN 320
222 IF PEEK(C)=142 THEN 330
223 IF PEEK(D)=137 THEN 340
224 IF PEEK(E)=147 THEN 350
225 GOTO 205
226 POKE A-2:160 PRINT "A"
  POKE A:222
  POKE B-2:160 PRINT "B"
  POKE B:222
  POKE C-2:160 PRINT "C"
  POKE C:222
  POKE D-2:160 PRINT "D"
  POKE D:222
  POKE E-2:160 PRINT "E"
  POKE E:222
227 FOR L=1 TO 1000: NEXT
  PRINT "AND THEY'RE OFF"
228 GOTO 215
229 AND "A" IS THE
  GOTO 1000
230 AND "B" IS THE
  GOTO 1100
231 AND "C" IS THE
  GOTO 1200
232 AND "D" IS THE
  GOTO 1300
233 WINNER

```



```

350 PRINT"AND "E" IS THE
    WINNER
360 PRINT"
    FREEDY
370 PRINT"

```

AND "E" IS THE  
"GOTO 1400  
THE NATIONAL BY R.I

```

380 PRINT"    THIS GAME IS FOR TW
    O PEOPLE!

```

```

410 PRINT"ENTER THE PLAYERS' NAMES

```

```

415 PRINT"PLAYER.1.":INPUT A$

```

```

420 PRINT"PLAYER.2.":INPUT B$ GOTO 700

```

```

560 PRINT"ON HORSE":INPUT F$

```

```

570 PRINT"AMOUNT":INPUT F

```

```

580 IF F>1000 THEN S$=

```

```

590 GOTO 7

```

```

700 PRINT"A$" PLACE YOUR BET NOT MOR
    E THAN \"D\"

```

```

710 PRINT"THE HORSES FROM THE TOP ARE
    :A

```

```

720 PRINT"
    B

```

```

730 PRINT"
    C

```

```

740 PRINT"
    D

```

```

750 PRINT"
    E

```

```

760 PRINT"ON HORSE":INPUT F$

```

```

770 PRINT"AMOUNT":INPUT F

```

```

780 IF F>1000 THEN 740

```

```

790 PRINT"B$" PLACE YOUR BET NOT MOR
    E THAN \"D\"

```

```

800 PRINT"THE HORSES FROM THE TOP ARE
    :A

```

```

810 PRINT"
    B

```

```

820 PRINT"
    C

```

```

830 PRINT"
    D

```

```

840 PRINT"
    E

```

```

850 PRINT"ON HORSE":INPUT G$

```

```

860 PRINT"AMOUNT":INPUT G

```

```

870 IF G>1000 THEN 860

```

```

880 GOTO 7

```

```

1000 FOR L=1 TO 3000 NEXT
    :PRINT"
    THE NATIONAL BY R.I
    :FREEDY

```

```

1010 PRINT"

```

```

1020 IF F$="A" THEN PRINT"A$ WINS \"
    *2\"

```

```

1030 IF F$="A" THEN PRINT"A$ LOSES \"
    *F\"

```

```

1040 IF G$="A" THEN PRINT"B$ WINS \"
    *2\" GOTO 1400

```

```

1050 IF G$="A" THEN PRINT"B$ LOSES
    \" GOTO 1400

```

```

1100 FOR L=1 TO 3000 NEXT
    :PRINT"
    THE NATIONAL BY R.I
    :FREEDY

```

```

1110 PRINT"

```

```

1120 IF F$="B" THEN PRINT"A$ WINS \"
    *2\"

```

```

1130 IF F$="B" THEN PRINT"A$ LOSES \"
    *F\"

```

```

1140 IF G$="B" THEN PRINT"B$ WINS \"
    *2\" GOTO 1400

```

```

1150 IF G$="B" THEN PRINT"B$ LOSES \"
    *G\" GOTO 1400

```

```

1200 FOR L=1 TO 3000 NEXT
    :PRINT"
    THE NATIONAL BY R.I
    :FREEDY

```

```

1210 PRINT"

```

```

1220 IF F$="C" THEN PRINT"A$ WINS \"
    *2\"

```

```

1230 IF F$="C" THEN PRINT"A$ LOSES \"
    *F\"

```

```

1240 IF G$="C" THEN PRINT"B$ WINS \"
    *2\" GOTO 1400

```

```

1250 IF G$="C" THEN PRINT"B$ LOSES \"
    *G\" GOTO 1400

```

```

1300 FOR L=1 TO 3000 NEXT
    :PRINT"
    THE NATIONAL BY R.I
    :FREEDY

```

```

1310 PRINT"

```

```

1320 IF F$="D" THEN PRINT"A$ WINS \"
    *2\"

```

```

1330 IF F$="D" THEN PRINT"A$ LOSES \"
    *F\"

```

```

1340 IF G$="D" THEN PRINT"B$ WINS \"
    *2\" GOTO 1400

```

```

1350 IF G$="D" THEN PRINT"B$ LOSES \"
    *G\" GOTO 1400

```

```

1400 FOR L=1 TO 3000 NEXT
    :PRINT"
    THE NATIONAL BY R.I
    :FREEDY

```

```

1410 PRINT"

```

```

1420 IF F$="E" THEN PRINT"A$ WINS \"
    *2\"

```

```

1430 IF F$="E" THEN PRINT"A$ LOSES \"
    *F\"

```

```

1440 IF G$="E" THEN PRINT"B$ WINS \"
    *2\" GOTO 1400

```

```

1450 IF G$="E" THEN PRINT"B$ LOSES \"
    *G\" GOTO 1400

```

```

1460 PRINT"
    THE NATIONAL BY R.I
    :FREEDY

```

```

1465 GET A$:IF A$="N" THEN 1480

```

```

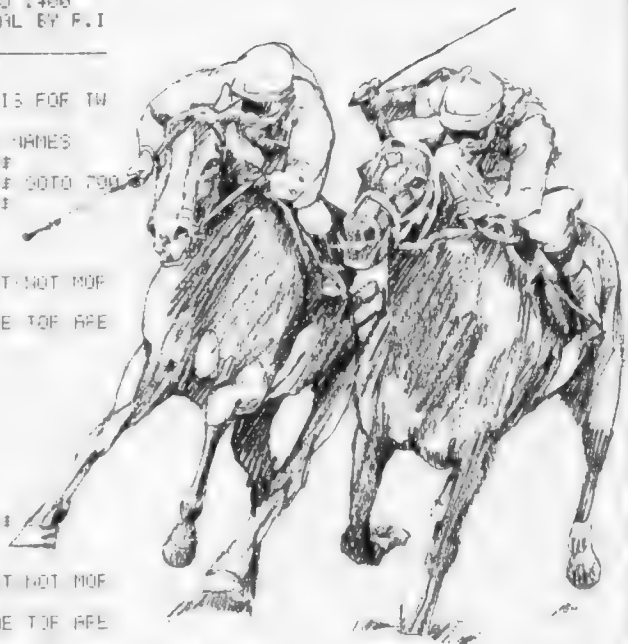
1470 IF A$="Y" THEN 1480

```

```

1480 IF A$="Y" THEN 1480

```



1210 PRINT"

1220 IF F\$="C" THEN PRINT"A\$ WINS \"

1230 IF F\$="C" THEN PRINT"A\$ LOSES \"

1240 IF G\$="C" THEN PRINT"B\$ WINS \"

1250 IF G\$="C" THEN PRINT"B\$ LOSES \"

1300 FOR L=1 TO 3000 NEXT

1310 PRINT"

1320 IF F\$="D" THEN PRINT"A\$ WINS \"

1330 IF F\$="D" THEN PRINT"A\$ LOSES \"

1340 IF G\$="D" THEN PRINT"B\$ WINS \"

1350 IF G\$="D" THEN PRINT"B\$ LOSES \"

1400 FOR L=1 TO 3000 NEXT

1410 PRINT"

1420 IF F\$="E" THEN PRINT"A\$ WINS \"

1430 IF F\$="E" THEN PRINT"A\$ LOSES \"

1440 IF G\$="E" THEN PRINT"B\$ WINS \"

1450 IF G\$="E" THEN PRINT"B\$ LOSES \"

1460 PRINT"



# A COMPLETE PACKAGE - ALL THIS FOR £499!

- \* 80K\* RAM (Exp to 144K)
- \* Full Stroke Keyboard
- \* 256K Data Storage Unit
- \* Daisywheel Printer
- \* Built-in Word Processing
- \* Buck Rogers Arcade Game
- \* Colecovision Compatible



# ADAM™ £499

## QUITE SIMPLY - VALUE FOR MONEY!

If you're looking for real value in a computer system, one which can handle anything from serious Word Processing to enhanced Colecovision style video games such as Buck Rogers, look no further. The Coleco Adam is here with a package which will make you wonder if you're dreaming when we tell you about it. A price breakthrough in computer systems, Adam is comprised of an 80K RAM memory console with a built-in 256K digital data drive, a professional quality, stepped and sculptured 75 key full-stroke keyboard, a letter quality daisywheel printer and a full word processing program built into the Console. Two additional pieces of software: Smart BASIC and also 'Buck Rogers - Planet of Zoom' (the ultimate in advanced video games), are included as well as a blank digital data pack. Adam can be used with any domestic colour Television set.

**MEMORY CONSOLE/DATA DRIVE:** The heart of the Adam system is the 40K ROM and 84K RAM memory console which combines with the 32K ROM and 16K RAM in Colecovision to give you a total of 72K ROM (including 24K cartridge ROM) and 80K RAM (expandable to 144K). Built into the memory console is a digital data drive which accepts Adam's digital data packs, a fast and reliable mass storage medium that is capable of storing 256K of information, that's about 290 pages of double spaced text! The console is also designed to accommodate a second optional digital data drive.

**FULL STROKE KEYBOARD:** The Adam keyboard has been designed as a professional quality keyboard that combines ease of use with an impressive array of features. It is stepped and sculptured for maximum efficiency and has 75 full stroke keys which include 8 colour coded Smart Keys which are redefined for each new application, 10 command keys which are dedicated to the word processing function and 5 cursor control keys for easy positioning of the cursor at any point on the screen. You can attach a Colecovision controller to the keyboard to function as a numeric keypad for easy data entry. It can also hold like a calculator, a feature which makes working with numbers particularly easy. The joystick part of the hand controller can be used in the same way as the cursor control keys, to move the cursor around the screen.

**LETTER QUALITY PRINTER:** The SmartWriter letter quality daisywheel printer is a bi-directional 80 column printer which prints at a rate of 120 words per minute. It uses standard interchangeable daisywheels, so a variety of typescripts are available. The printer has a 9.5 inch wide carriage for either single sheets or continuous fan fold paper and uses standard carbon ribbons. It is comparable to many printers which cost as much as the total Adam package. The printer can be used either with the Adam's SmartWriter word processing program or as a stand alone electronic typewriter.

**BUILT-IN WORD PROCESSOR:** Adam comes with SmartWriter word processing built-in. This program is so easy to use that you only have to turn the power on and the word processor is on line and ready to go. Detailed instruction books are not necessary as the Computer guides you step by step, working from a series of Menu commands. It enables you to type in text, then completely edit or revise it with the touch of a few keys. Changes are readily made and a series of queries from the computer confirm your intentions, so that you can continuously double check your work as you type.

**COMPATIBILITY WITH COLECOVISION:** By using high speed interactive microprocessors in each of the modules, the Coleco Adam is designed to take additional advantage of both the 32K ROM and 16K RAM memory capability in the Colecovision. If you do not already own a Colecovision Console (£99 inc VAT), then you will need to purchase this when you initially purchase your Adam Computer package (£499 inc VAT), making a total purchase price of (£598 inc VAT).

**WHAT IS COLECOVISION:** Colecovision is one of the world's most powerful video game systems, capable of displaying arcade quality colour graphics of incredible quality on a standard Colour TV set. The console (see picture bottom left) accepts 24K ROM cartridges such as Turbo and Zaxxon and is supplied with the popular Donkey Kong cartridge and a pair of joystick controllers. Colecovision has a range of licensed arcade hits available such as Gorf, Carnival, Cosmic Avenger, Mouse Trap, Ladybug, Venture, Smurf, Pepper II, Space Panic, Looping, Space Fury, Mr Do, Time Pilot, Wizard of Wor and many others. So there you have it, Adam plus Colecovision the unbeatable combination. Send the coupon below for your FREE copy of our 12 page Colour brochure giving details on the complete Adam system.

SILICA SHOP LTD, 1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX. Tel: 01-309 1111 or 01-301 1111

## ORDER NOW - OR SEND FOR A FREE COLOUR BROCHURE

To: SILICA SHOP LTD, Dept BIGK 0784, 1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX. Telephone: 01-309 1111 or 01-301 1111

### LITERATURE REQUEST:

Please send me your FREE 12 page colour brochure on Colecovision and Adam.

Name  Surname

Mr Mrs Ms Miss Mrs Ms

Address

Postcode

### ORDER REQUEST:

Send me Adam as follows:

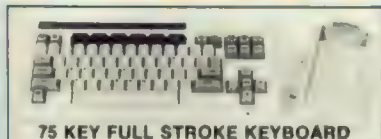
Adam system package (incl. RAM) £499.00 VAT

Adam by Colecovision (incl. RAM) £598.00 VAT

Send Adam Computer to: Silica Shop Limited

REF: 1111 - Please debit my Account (Saturday & Sunday)

Card Number



75 KEY FULL STROKE KEYBOARD



MEMORY CONSOLE & DATA DRIVE



DAISYWHEEL PRINTER



COMPREHENSIVE INSTRUCTIONS



COLECOVISION GAMES CONSOLE



# ARCADE ALLEY

PAUL RAMBALI dons bone-dome and G-suit for some breathtaking air combat sequences

## FOXBATS WERE NEVER LIKE THIS...

FROM THE moment you drop the coins in the slot and literally feel the jet engines rumble to life, you know you are in for a ride.

Myistar Electronics' *M.A.C.H. 3* is the most sophisticated, the most hopelessly gripping laser game yet — one that uses real-life footage to put you in the cockpit of a modern jet fighter. Ever wanted to fly a crack Israeli Air Force raid across the Golan Heights? Ever wondered what a victory roll feels like at 2,000 feet? All you have to do is scramble and go upstairs in this baby.

The hardware alone is impressive. Designed by Dave Pfeiffer, the wrapover console and the special panoramic screen image interacts with the aural (and — I promise you — *physical*) sound effects to create a startling and highly effective fantasy. The engines throb beneath you, missiles impact with a distant thud, and as the jet banks and rolls, you find yourself leaning helplessly into the turns.

Select a game option to start: either over-flying — i.e.

looking straight down on what is in fact actual footage of San Diego in California; or flying through — with a view straight ahead as though from a real cockpit — a series of linked scenes probably filmed in the arid, rocky terrain of the American South West.

### THRILLS AND SPILLS LASER-STYLE

In both options, your unmarked Military Air Command Hunter jet is superimposed using computer graphics, but the first — over-flying — definitely lacks the excitement of the latter. It's much slower and, despite targets on the roads, quayside and industrial sites below, your attention is drawn to the mundane business of dodging enemy jets and rockets that scroll across the screen in the all-too-familiar patterns of games like *River Raid*.

Everyone but the *M.A.C.H. 3* neophyte will opt straight away for the second game. Targets appear marked by com-





ons  
-suit  
king  
aces



puter-generated 'windows' into which you must fire missiles as you hurtle across the landscape, coming in low over rocky outcrops and banking hard into valleys to out-flank enemy rockets. A steep climb takes you high into clouds that hide helicopter gunships; diving down again, your target is a hydro-electric dam. A hair-raising turn takes you over some hills and into a heavily-fortified ravine. Here the enemy gunners have heat-seeking rockets on their side, and many lives have been spent mastering the knack of hitting these exasperating projectiles before they intercept. The interminable, perilous (and costly) ravine finally opens out onto flatlands, with no target in sight and time for a well-earned victory roll.

Programmed by Chris Brewer and Fred Darmstadt, *M.A.C.H. 3* is a real roller-coaster — a loud, dizzy, high-speed, vertigo-inducing tumult of sights and sounds. Simply hanging on to the joystick and plummeting through the air is a thrill, never mind scoring any points. The daredevil man-

oeuvres executed in the course of this 3D spectacle are a challenge for the strongest stomachs. So captivating is it that one reviewer even wrote that she heard verbal instructions advising which targets hit (or was I so caught up that I didn't?).

## ALONG COMES EASTWOOD

Like Tarto's *Laser Grand Prix* — a *Pole Position* game superimposed on actual footage of the Mount Fuji race circuit — *M.A.C.H. 3*'s real backgrounds are an eye-popping advance on Don Bluth's cartoon animation for *Dragon's Lair*. By the time you read this it will have been joined by Atari's *Firefox*, incorporating footage from the Clint Eastwood film about stealing a Soviet jet. And it can only be a matter of time before you are sitting alongside *Knightrider* or even playing tennis with John McEnroe. Imagine the sound effects on that!



# SOFTWARE INVASION...

Let excitement invade your home computer!  
Travel to Alpha Centauri. Enter the Vortex.  
Command the ground missiles, or join the  
shoot-out at the O.K. Corral!

## GUNSMOKE

The movement of the saloon-bar door was all the warning he needed! At the speed of light his hand moved toward his holster while a sixth sense warned him of the upper floor window. 3D ACTION. SOUND EFFECTS. BEAUTIFUL GRAPHICS BBC MODEL B £7.95 CASSETTE £11.95 DISK

## 3D BOMB ALLEY

The continued thunder of the hissing ground missiles had long now deafened him - unless he had some of those bombers down, the fleet, in the small stretch of water was a sitting duck. 3D ACTION. SOUND EFFECTS. BEAUTIFUL GRAPHICS BBC MODEL B £7.95 CASSETTE £11.95 DISK

## ATTACK ON ALPHA CENTAURI

He punched the key, and the control monitor filled with the picture of bug-eyed wasps attacking from their volcanic nest, decisively he dived to the left and his laser gun burst into action. 3D ACTION. EXPLOSIVE SOUND EFFECTS BBC MODEL B £7.95 CASSETTE £11.95 DISK

## VORTEX

## EAGLE WING

## Spooks & Spiders

There was no escape, he had to enter the Vortex and bat on his skills! He grabbed the manual controls and with determination fired both the deck guns. EXCELLENT SOUND KEYBOARD ON JOYSTICK. BBC MODEL B £7.95 CASSETTE £11.95 DISK

## EAGLE WING

He glanced at his fuel levels, a few more seconds at the controls and he was winging round. He knew, in two minutes the enemy would be on him. EXCELLENT SOUND KEYBOARD ON JOYSTICK. BBC MODEL B £7.95 CASSETTE £11.95 DISK

## Spooks & Spiders

perhaps, very slowly, climbing down, his foot on the ground. SOUND EFFECTS KEYBOARD ON JOYSTICK. BBC MODEL B £7.95 CASSETTE £11.95 DISK

## HOW TO ORDER

Write to: Software Invasion, 50 Elborough Street, Southfields, London SW18 5DN. Please add £1.00 per item for postage and packing.

Do you write your own programmes? If you have an unusual programme which can meet our standards you could be earning more than £250 per week. Why not take advantage of our sought after reputation. Write now!

Post to: SOFTWARE INVASION 50 ELBOROUGH STREET SOUTHFIELDS LONDON SW18 5DN

GAMES	ONLY	TAPE	DISK	40 TRACK	80 TRACK	£
GUNSMOKE						
VORTEX						
ATTACK ON ALPHA CENTAURI						
3D BOMB ALLEY						
EAGLE WING						
SPYGLASS & SPIDERS						

I enclose my Cheque/P.O. for £

Name

Address

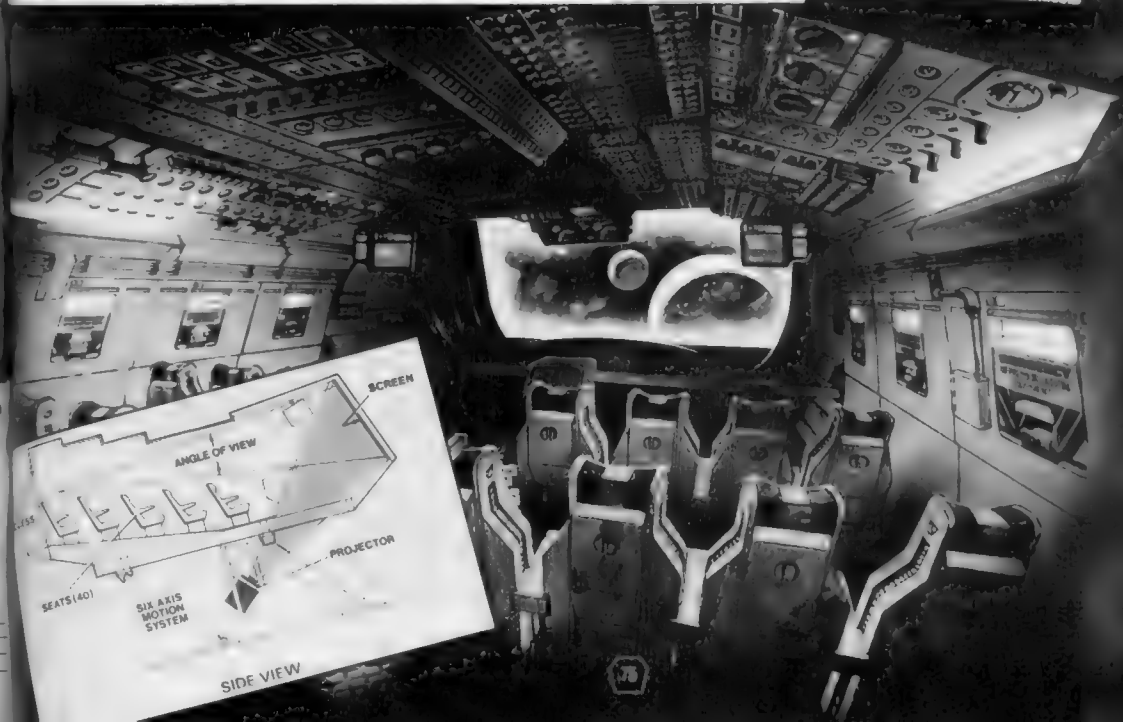
I am a Distributor/Multiple Retailer/Dealer. Please contact me (please delete what is not applicable)

# SOFTWARE INVASION

50 Elborough St. Southfields, London SW18 5DN

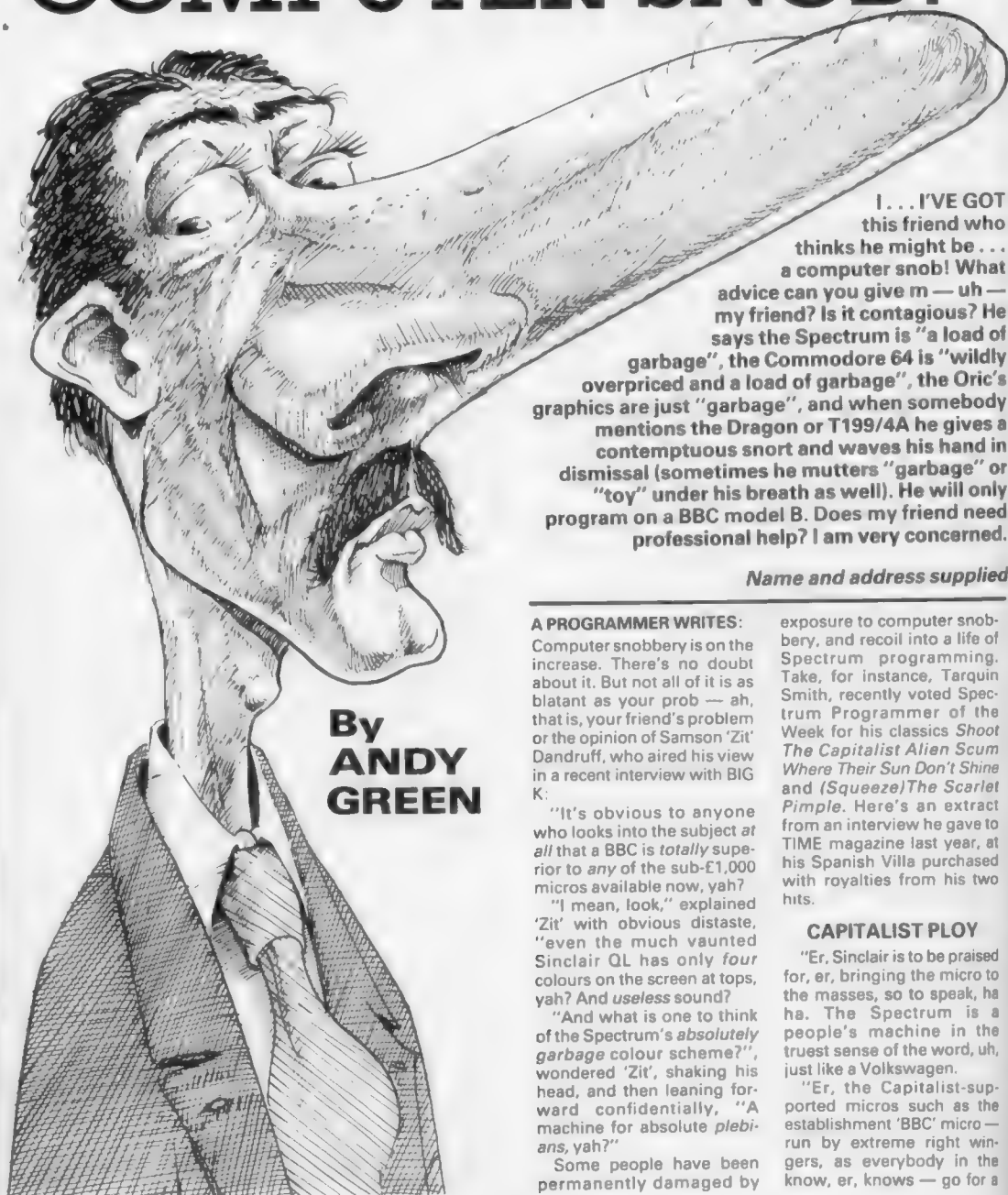
# ALLEY

and  
vited.  
4MV, all  
500 retail



NDOM SWIRL SON

# CONFESSIONS OF A COMPUTER SNOB!



By  
**ANDY GREEN**

I... I'VE GOT this friend who thinks he might be... a computer snob! What advice can you give me — uh — my friend? Is it contagious? He says the Spectrum is "a load of garbage", the Commodore 64 is "wildly overpriced and a load of garbage", the Oric's graphics are just "garbage", and when somebody mentions the Dragon or T199/4A he gives a contemptuous snort and waves his hand in dismissal (sometimes he mutters "garbage" or "toy" under his breath as well). He will only program on a BBC model B. Does my friend need professional help? I am very concerned.

*Name and address supplied*

## A PROGRAMMER WRITES:

Computer snobbery is on the increase. There's no doubt about it. But not all of it is as blatant as your prob — ah, that is, your friend's problem or the opinion of Samson 'Zit' Dandruff, who aired his view in a recent interview with BIG K:

"It's obvious to anyone who looks into the subject at all that a BBC is *totally* superior to any of the sub-£1,000 micros available now, yah?

"I mean, look," explained 'Zit' with obvious distaste, "even the much vaunted Sinclair QL has only *four* colours on the screen at tops, yah? And *useless* sound?

"And what is one to think of the Spectrum's *absolutely* garbage colour scheme?", wondered 'Zit', shaking his head, and then leaning forward confidentially, "A machine for absolute *plebians*, yah?"

Some people have been permanently damaged by

exposure to computer snobbery, and recoil into a life of Spectrum programming. Take, for instance, Tarquin Smith, recently voted Spectrum Programmer of the Week for his classics *Shoot The Capitalist Alien Scum Where Their Sun Don't Shine* and (*Squeeze*) *The Scarlet Pimple*. Here's an extract from an interview he gave to TIME magazine last year, at his Spanish Villa purchased with royalties from his two hits.

## CAPITALIST PLOY

"Er, Sinclair is to be praised for, er, bringing the micro to the masses, so to speak, ha ha. The Spectrum is a people's machine in the truest sense of the word, uh, just like a Volkswagen.

"Er, the Capitalist-supported micros such as the establishment 'BBC' micro — run by extreme right wingers, as everybody in the know, er, knows — go for a



large profit margin to swindle the working class and the unemployed from their hard earned wages!" Tarquin told us, sipping from his dry Martini and taking a drag from his cigar. "Or, er, supplementary benefit," he added thoughtfully.

Some of the worst afflicted computer snobs attain the height of their sadistic pleasures by becoming software reviewers for magazines. When they grind a program into the dust and spit on its limp remains, some try to justify their actions by claiming they are weeding out the good programs from the chaff.

Tom 'No K's' Hoffmann, variously described by experts in the field as a 'big-headed twit', a 'jerk' and 'a snob' defends his reviews.

"Computers," he begins in his monotone voice, fingering his ear-lobe and looking away to one side, "are capable of much better.

"The main reason why games aren't very good at the moment is that one programmer can only do so much. Programs written by teams are going to be much, much better. Take *The Hobbit*, for example.

"Really, although it was good at the time, *The Hobbit* is a very simple adventure. Without graphics, as in the BBC version, it really isn't worth playing," he added.

"I don't know about you,

but arcade games simply bore me to tears," he yawned. "They're all the same. Once you've played *Space Invaders*, you've played them all."

However, some small retailers and software houses have been claiming that large software houses with massive monetary backing will be the death of them. Jack Fudge — who runs Cheap-Jack software from the backroom of a run-down fish and chip shop in Romford — agrees.

## CORPORATE GREED

"Imagine," says Fudge. "An' Bug-Byte. And blooming 'Software Projects' ... Pah! 'Sgetting like an honest bloke can't earn a decent livin'. Bloomin' Fassischts, thass what they is," he added, pausing to pick out a chip from his desk and chew it gloomily.

"Issat fancy packagin' wot does it, yer mark me words, boy. Wiv us the cussomer knows what e's getting, know what I mean? None of that fancy gold stuff — we wrap the cassettes in chip bags so as yer can see jus' whass yer's gettin' ... clean ones, mind you," he confided, pointing to a torn cardboard box over in a corner spilling greaseproof chip bags onto the floor.

Mr Fudge, whose company's bread and butter is the games tape *'One Thousand*

*Super Awesome One Line Games For The Jupiter Ace'*, claims that big companies are 'conspiring' to push the smaller companies out of the marketplace. He cites the instance that his tape for the Jupiter Ace was selling "tens of units" a week until about six months ago, when for some reason he suddenly wasn't able to sell any at all.

"S pretty obvious to me, yer know what I mean, that this was not unconnected, yer know what I mean, with Virgin Games bringing out a new batch of programs, are yer with me?" Fudge told BIG K darkly.

But what can be done to help the certified snob? We asked Dr X.S. Verbiage, a top specialist in the field, for some handy tips:

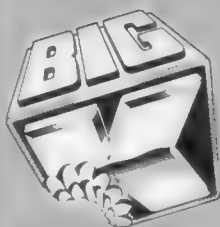
"\*Don't let him read an American magazine called *BYTE* — if necessary feed him *BIG K* intravenously.

"\*Make him use a Spectrum at least once a month at first, then with increasing frequency. If the case is very bad, start him off with just touching a Spectrum keyboard for five seconds at a time.

"\*Burn any books by Lance Leventhal or Rodney Zaks.

"\*Make him use tape recorders again instead of his new disc drive. Nothing humbles a hacker so.

"\*If none of the above works, shoot him. Or yourself.



# TAKE A 'BYTE' OUT OF BIG K!

Get your teeth into some serious cash bonuses from accessing BIG K!

Can you ...

- \* Write a letter?
- \* Write a program?
- \* Produce some spiffy computer graphics?

\* Share some games-playing hints and tips with your fellow hackers?

\* Tell our reviewers where to get off?

If so then you should be talking to us. We pay hard cash (non-volatile, non-corruptible) for any contributions printed in *BIG K*. Get into a nice little earner now. Write to:

BIG K,  
IPC Magazines Ltd.,  
Room 2038,  
King's Reach Tower,  
Stamford Street,  
London SE1 9LS.

**We're waiting...**

EXACTLY WHAT SYSTEM HAVE YOU GOT?



TONY BENYON

**Hop the rabbit along the girders. When over a lift hit the fire button on your joystick. Keep going till you get the carrot at the top — watch out for falling barrels. Eight levels to conquer.**

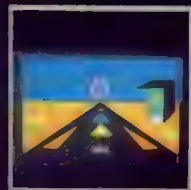
TRIED &  
GAMES

78

# System 3 Software...Graphically Amazing!

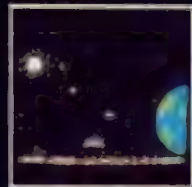
## DEATHSTAR INTERCEPTOR

LAUNCH

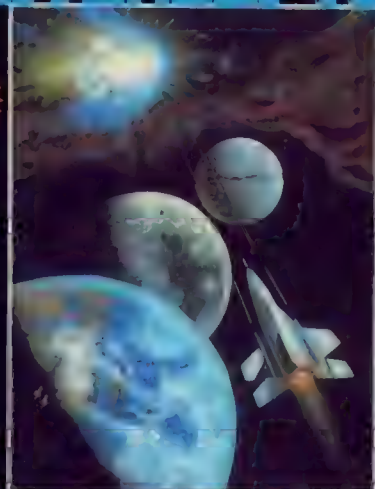


(Screen 1)

APPROACH



(Screen 2)

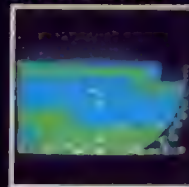


DURANIUM BARRIERS



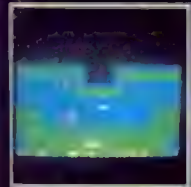
(Screen 4)

INTERCEPT MISSILES



(Screen 6)

ENTRY



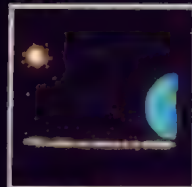
(Screen 3)

Earth is threatened by an Empire Deathstar, can you penetrate its defences and destroy it before it destroys you? 52K of pure machine code to give you 12 screens of 3D graphics, super smooth 3D animation, unbelievable sound effects music, 4 skill levels and hiscore table... this is the ultimate challenge?

This game has to be played to be believed! You have not seen what the Commodore 64 is capable of until you have played Deathstar Interceptor! - Commodore 64.

Available now at **£9.99!**

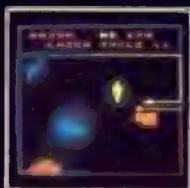
VICTORY



(Screen 12)

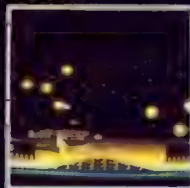
CAN YOU REACH IT?

LASER CYCLE



★ FIRST 1000 ORDERS  
RECEIVE 20% OFF  
NEXT PURCHASE! ★

COLONY 7



• Dealer inquiries  
call (01) 924 0238

• Export inquiries invited

selected titles  
available at Boots  
and all good stores



LASER CYCLE

... The M.C.P. has selected you to ride on the deadly grid; two screens of strategy and action, multiple skill levels, hi-score table, pause facility, demo mode.

BBC Model B - £8.95!

COLONY 7

Colony 7 fast furious 3D action, as you defend your colony's food stocks from the space pirates! The only game to use graphics 9. Unbelievable 3D landscape!

ATARI 400/800/XL - £9.95



### HOW TO ORDER

To purchase any of the items above, simply fill in the coupon below with your requirements. Make cheque/P.O. payable to: SYSTEM 3 SOFTWARE LTD and post to the address below. Please allow 7 to 14 days for delivery. All prices inclusive of P&P and 15% VAT.

### OVERSEAS ORDERS

(Please add £1.00 per game ordered)

Post to: **SYSTEM 3 SOFTWARE, 10 MARSHALSEA ROAD, LONDON SE1 1HL**

Please send me the following items

(No Req) ☐

COLONY 7

(at £9.95 - FOR ATARI)

(No Req) ☐

LASER CYCLE

(at £8.95 - BBC Model B)

(No Req) ☐

DEATHSTAR INTERCEPTOR

(at £9.99 - COMMODORE 64)

Name

Address

Tel (DAY)

Tel (EVE)

# System 3 Software

10 MARSHALSEA ROAD, LONDON, SE1 1HL



# SABRE WOLF

ULTIMATE  
PLAY THE GAME

48K SINCLAIR ZX SPECTRUM  
£9.95

# 3 from POSTERN for '84



## 2

## 1

## 3

### DINKY DIGGER

It's super-fast, furious and as mean as they come.  
(Spectrum 48K)

### XANAGRAMS

Over 5,000 permutations in this game of skill for all ages.

(Spectrum 16K/48K BBC 'B' Electron CBM 64)

### PENGWYN

As the temperature rises, strange happenings begin in Pengwyn's frozen world.  
(Spectrum 48K BBC 'B' Electron CBM64 Spectra video).

## POSTERN



Available nationally from specialist retailers and all good multiples.

Please write quantities required in boxes provided and state computer type.

Name \_\_\_\_\_  
Address \_\_\_\_\_

WM: 3-84

POST-TO: Postern Ltd, PO Box 2, Andoversford, Cheltenham  
Glos GL54 5SW. Postern is always on the look out for any new  
games you might have developed.



POSTERN

Total £

or Access No

Please Postern  
People post me:

1	Xanagrams
2	Dinky Digger
3	Pengwyn

Price £6.95 each

(£7.95 for overseas mail order)

SPECTRUM  
9.95



# STEFAN PÄGE

Supplied with Quick Reference Cards, to speed up setting to your favourite games, demonstration cassette and twelve months guarantee.

Still incorporating the all important rear expansion connector which means other peripherals can be connected at the same time i.e. Ram Packs, Printers, Speech Units etc and of course the key replication principle used guarantees this will never conflict electrically with any other add-ons.

8.50



11.95

## Quickshot

DEALER ENQUIRIES WELCOME



# HARE LIFTS continued

```

450 IF J=3 THEN GOTO0410
460 IF J=1 THEN P=20 BP(2)=P+2+P19
480 P=PEEK(P)+1: P=10: C1=PEEK(P)+1
481 P=PEEK(P)+1: NH=875: NH
490 IF B=1 THEN S=0
500 POKEBP(2)+30720, C2: P=PEEK(P)+2
501 POKEBP(2)+111
502 IF PEEK(P+PP+22)=3 THEN S=0
503 IF LE=8 THEN C2=0
504 IF LE=8 THEN C1=0
505 IF LE=7 THEN C2=0
506 IF LE=8 THEN C2=0
507 IF LE=8 THEN C1=0
510 IF LE=7 THEN C1=0
511 IF J=1 THEN S=0
512 IF PEEK(P+PP+22)<4 THEN P=0
520 IF PEEK(P)=2 THEN S=0
521 P=P+PP: P=0
530 IF PEEK(P)=2 THEN S=0
540 IF PEEK(P)=1 THEN S=0
550 POKEP+30720, 3: P=PEEK(P)
560 FORT=0: TOTT=0
570 POKEP, 0: IF J=1 THEN P=P+22
580 J=0
590 POKEBP(1), 0
600 POKEBP(2), 0
610 GOTO370
1000 IF PEEK(P+22)<3 THEN GOTO410
1001 IF P<7768 THEN GOTO410
1005 CL=PEEK(P-66)
1006 CC=PEEK(P-66)+30720
1010 FORU=1: T04
1011 NN=NN+5: POKEBP(2), NH
1020 P=P-22: POKEP+30720, 3
1030 POKEP, 1
1040 POKEP+22+30720, 5: POKEP+22, 3
1041 FORT=1: T050: NEXT
1042 POKEP+22, 0
1050 NEXTU
1060 POKEP+22+30720, CC: POKEP+22, CL
1070 POKEP+22, 4
1080 GOTO410
2000 BP(1)=BP(1)+88
2001 NH=NH-10
2010 IF BP(1)>8120 THEN BP(1)=7747: P1=1: NH=0
2020 GOTO430
2030 BP(2)=BP(2)+1
2040 NJ=NJ-10
2050 IF BP(2)>8120 THEN BP(2)=7766: P2=20
2060 IF BP(2)>8120 THEN BP(2)=P+1: P=0: NH=0
2070 GOTO480
5000 PRINT "3": POKE36869, 249
5010 PRINT "3": YOU SURVIVED FOR "
5020 PRINT "3": "LE
5030 PRINT "3": ATTEMPTS"
5040 IF LE>1 THEN PRINT " "
5050 PRINT
5060 PRINT "3": PRESS FIRE BUTTON
5070 POKE36875, 0: POKE36875, 0
5080 POKE36874, 140
5090 FORT=1: T0600
5100 GOTO4: NEXTU
5110 POKE36874, 0
5120 IF PEEK(P+37157)>44 THEN P=0
5200 GOTO3
5210 NH=150: NH=230: NJ=230
5220 POKEBP(2), 0
5230 POKEBP(1), 0
5240 GOTO255
10000 PRINT "3": FINISHED!!!!
10010 T=VAL(T14)
10020 IF T07 THEN PRINT "3": NEW RECORD!!!!: T=1
10030 POKE36875, 0
10040 POKE36875, 0
10050 POKE36874, 0
10060 GOTO5050
20000 PRINT PEEK(P+37157): GOTO20000

```

READY.



ILLUSTRATION: TONY JOSWIAK

*The thing you've always wanted to do  
but never thought possible ...*

# CHANGING CHARACTER

**NIGEL FARRIER continues  
his how-to series on  
Atari graphics ...**

**THIS MONTH** I intend to give you a brief overview of how to redefine the character set on the Atari 400 and 800. My eventual aim, after covering Antic Mode 4 next month, will be to use this to write a short game for you. As I have not written it yet myself your guess will be as good as mine as to how it will turn out!

## In-built characters

The Atari holds its own 256 characters in ROM or Read Only Memory. It actually only holds half of them but who is counting? Because the characters are situated in ROM we hit our very first snag (and you thought that this was going to be easy!). You cannot write to ROM to change them. Fortunately Atari did give us location 756. If you PEEK (756) you will get back the number 224. What this number actually refers to is 'page' 256 in the computer's memory. As a page is 256 bytes long, page 224 is pointing to 224\*256 which (for those of you without a calculator) is 57344. Lo and behold this just happens

to be the first memory address of the ROM and it is the beginning of the data for the in-built character set.

This is therefore going to make our job simpler (see—you were right, this is going to be easy after all). All we have to do is to POKE memory location 756 with another number and the computer will then believe that the character set is somewhere else and start using that one. You've probably guessed by now that we will point it to our own redesigned set.

Yet another point to remember here. Every time you execute a GRAPHICS statement, location 756 is reset to 224. You must therefore remember to POKE this location with the page number of where your character set resides. If not your display will not be quite what you expected.

## Relocating the character set

All we have to do now is to decide where to put said character set. The normal place for this is at the top of RAM, otherwise

known as MEMTOP. The location of MEMTOP is held in location 106. PEEKing (106) will give you different results depending upon whether your machine is a 16K, 32K or 48K model. In order to slip our character set being written over by things such as a display list, we have to fool the Atari into thinking that it has less memory by POKEing location 106 with a number less than is already stored there.

As I will show you in a moment, we have to reserve 4 pages (i.e. 1024 bytes) at the top of memory for our character set. So naturally you would expect to enter the command **POKE 106, (PEEK(106)-4)**.

Wouldn't you? No—

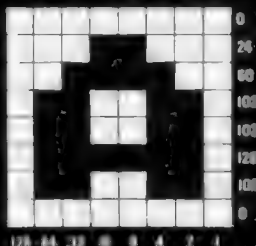


FIGURE 1

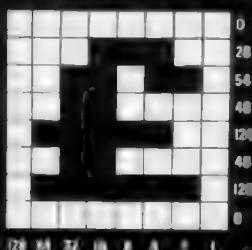
unfortunately certain functions will overrun MEMTOP so we will have to lower the location by even more. Normally I take it off of it just to be on the safe side.

## How the character set is stored

Each character is stored as a series of 8 bytes. If we look at the character 'A' it is stored as 0,24,60,102,102,126,102,0. Figure 1 shows how this makes up the letter.

The character is on a grid of 8 by 8. Each of the eight rows is used to calculate a number from 0 to 255 depending upon which square is filling in (i.e. shows on the screen) or not (i.e. background). Therefore, the second row we would have the binary number 00111100 (or 60 in decimal), and the sixth row it would be 01100110 (or 102 in decimal). One thing of note here. All characters have pairs of adjacent blocks filled in. You will not find a character with only one block on its own as this would give an artefact effect on the screen. We will be using that with great effect in our game (I hope).

There is only one more major stumbling block to overcome. That is that, although the letter 'A' has an ATASCII code of 65, it is in fact the 33rd character stored in memory! Weird. But at least there is some sort of logic to it. Figure 2 shows that the first 32 graphics characters have been swapped so that they now run from





Post to: Filesixty Ltd., 25 Chippenham Mews, London W9 2AN, England. Tel: 01-289 3059.  
Trade enquiries welcome.

# Three more challenges from ROMIK



**More great games  
for the BBC and  
Acorn Electron.**

**All keyboard or  
joystick compatible.**

**Just three from a range  
of over 70 games for  
11 computers.**

Available from selected branches  
of: Boots, Dixons, John Menzies,  
W.H. Smith, and all good  
computer stores.

**ROMIK**

Romik Limited, 272 Argyll Avenue, Slough SL1 4HE

## WANNA WIN A FIVER?

Yes, you too can join the formidable team of literati assembled on this here double-page spread and end up RICH by FIVE WHOLE POUNDS! (If we publish your letter, that is.)

Mail your wail to ...

Letterbase,  
Big K  
Room 2038  
IPC Magazines Ltd  
Kings Reach Tower  
Stamford Street  
London SE1 9LS

## Letters to BIG K

### They Can Read Us ANYTIME ...

IT WAS nice to read a computer magazine with a news section that didn't genuflect to all and sundry, but didn't automatically slag everyone off, either — and included the very interesting and perhaps potentially controversial Budapest Bees story.

Also welcome was the inclusion of articles about computer PEOPLE rather than just computers, as well as equally rare topics like real flight simulators and computer crime — smart. Don't ease up in the features department (Paul Walton certainly gets around).

The software reviews were superb, I think probably the best I've seen — an opinion formed after reading every magazine around. Don't just review games, though. A word processor and a data base reviewed in each issue could be useful. I was also pleased to see that reviews weren't completely dominated by Spectrum programs: too many people forget that there's life after ZX. Especially good (to me) was the sprinkling of Dragon reviews. It's a machine a lot of magazines tend to overlook, especially in the software area, and they seem to forget they could be losing about 150,000 potential readers.

The personality reviewer is a neat touch but Charts don't really serve much purpose — by the time a game reaches the top, it's hardly necessary to trumpet it much more. Another major weakness is that Charts have an automatic bias towards machines which have sold most.

In the hardware department I really enjoyed *Squaring Up*. I mean, what's wrong with a bit of good-natured agro?

I keyed in *Demon Driver*. It was no worse than any I've entered from any other magazine and better than many, but really, no-one's really likely to play these pseudo-arcade games. Small utilities would be vastly preferable as well as leaving extra space for another Fabulous Feature or two, perhaps even an additional Razy Regular or some more Heavenly Hardware.

The magazine's title is, well, horrible. It's a shame to spoil Classy Contents with a Naff Name.

Last of all, a couple of personal questions:

1. Is Eddie Babbage any relation?
2. Richard Burton can't be, surely?

Keep up the good work. This is at least one copy you'll sell next month. In fact, I reckon you could find yourselves with a Big Klassic.

Cameron M. Black, Glasgow.

### Gunning Blag

Your free gift in issue 1 was a brill CIS cassette that worked very well. I was very disappointed to be unable to find anything as good in the shops. Could you please, please send me some Big K computer tapes, or tell me where I can buy one.

P.S. I love your mag.

J. Clarke,  
Newcastle upon Tyne.

We had a lot of compliments on our BIG K cassette, which we here prefer to call a Data Slug. The hi-quality clear plastic ... the little brass screws ... the whole thing just oozed quality. And as it happens (cause to cough and shoot cuffs), due to the fact that we had to order them in the megaquantities, there ARE one or two left over. Stand by for an upcoming special offer.

Many thanks for your letter, Cameron. A Marvellous Missive. A Splendid Screed. Post to Boast About — as we have here by printing (nearly) all of it. Regarding reviews, we will continue to try and review stuff for as many machines as possible. On this subject of listings in BASIC — what do other readers feel? All magazines do it, and none of them feel they can stop doing it. What's the solution? Carry on as before, or do as Cameron suggests and start incorporating more utilities? We propose, in upcoming issues, to sway not a little in the direction of the latter ...

To answer your personnel questions ...

1. Yes, Eddie Babbage IS related to the legendary Charles Babbage, inventor of the 'analytical engine'. Ed is in fact Chas's great-great-grandson. Do we gain extra credibility and should we pay Eddie more as a result?
2. Richard Burton is NOT related to the legendary Welsh-born Ham — sorry, Distinguished Thespian. He doesn't even look like him. He doesn't talk like him. But he sure can play *Atic Atac* (or any other hotso game) better than him.

### CONGRATULATIONS!

Your new magazine Big K is absolutely excellent. Well done! It's good to see a magazine that not only lists computer programs but tells you which games are the best buy. I placed my order for No. 2 as soon as I had put down No. 1!

Warren Crawford,  
Braunton, Devon.

Shucks, Warren ... what quick reflexes!

I THINK your new magazine is fabulous. Your reviews are excellent. Big K is also one of the most colourful magazines I've ever seen. Your magazine brings a new dimension to computers.

V. Shanner,  
Sesford, Essex.

That's nothing. You should see what the Editor can do with used chewing gum.

### CONGRATULATIONS!

On what? For having the best computer mag out! Yes, I think Big K is the best in the known universe. All the reviews, news, features simply are great. And you don't put too many ads in, like so many other mags. Can I let you into a secret? I'm saying all these good things so that this gets printed. Oops! Sorry!

Bernard McKeown,  
Barnbridge, Co Down.

Thanks, Bern. Your cheque is in the post.



### Enterprising Reader

I HAVE heard rumours that the Enterprise will be able to accept and run both Spectrum and Commodore 64 programs. Please could you clarify these rumours, one way or the other?

John Priest, Wolverhampton.

The good news: Enterprise will be launching two converters this September along with their computer. These will convert Sinclair and BBC Basic into Enterprise Basic.

The bad news is that games written in machine code are unintelligible to the converters. There are no prices available for Enterprise peripherals as yet, and even The Shadow has been unable to detect the slightest asssuration of a whisper that says there may be plans for a Commodore converter. We'll keep you informed.

### Electron Lust

Beautiful magazine — I'm impressed! I am soon to own an Acorn Electron and would like to know if you are going to list programs for it.

David Wayne, Leeds.

Most BBC programs (other than those in Mode 7) will run on the Electron while others need a few conversions to do so. However, you'll be transported with joy — at least as far as Mars — by the knowledge that the Electron has fans here at Big K. We'll carry on/soon be feeding its fat keyboard face with some delectable listings.

### Putting The 'A' Team On HOLD

I AM an LSI component specialist for a multinational electronics company and one of my hobbies is using my BBC 'B' computer. I was therefore interested in your Eprom Programmer article ('BUILD A CHEAPO EPROM' — BIG K/April). However I would like to draw your readers' attention to the differences between a 2764 or 27128 and a 2764A and 27128A.

The A versions are replacing the ordinary versions from some manufacturers and although totally compatible in read mode, are programmed entirely differently:

1. They are programmed at Vppd12.5v, VCCd6.0v
2. They do not use a fixed 50ms pulse.

Instead they use so-called "intelligent" or "adaptive" programming algorithms which apply a 1ms pulse followed by a read/verify cycle. Further 1ms pulses are applied until a correct verify occurs, and then an 'overprogram' pulse of three or four times as long as the total number of 1ms pulses is applied (manufacturers vary in their algorithms). After the complete EPROM is programmed, a verify at VppdVccd5.0v is performed.

The intention of these algorithms is to speed up the programming time and also to ensure that every bit is programmed fully.

The duration of the pulses can total from 4 to 100ms and a fixed 50 ms pulse is NOT permitted — it can corrupt other bits in the same column.

Typically the 2764 will program in one and a half minutes rather than 7 minutes (try doing a 27512 — now available — it could otherwise take 40 minutes!). The net effect of all this is that plugging an -A version into 21v will kill it!

Could I suggest a follow-up article to cover a programmer for -A versions? The 12.5v and 6v could easily be obtained from the 15v auxiliary power output of the Beeb and the machine-code section of the program modified to follow these intelligent algorithms.

J. J. F. Cunningham, Takely, nr. Bishops Stortford

ANDY GREEN writes: these are new chips, as you say, and aren't yet available in retail shops. The 15v power line you mention in the Beeb is in fact 12v, and this would do very nicely as Vpp. Look out for an article on how to convert the BIG K Cheapo Epro to work with 'A' versions soon. For NOW, use only the 2764 and 27128 versions with the programs.



### But Does He Have A Parrot?

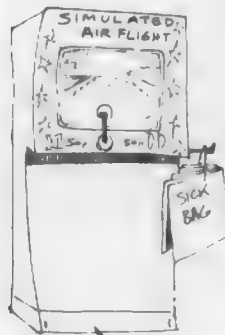
I WAS very interested in Tony Tyler's review of the Atari 800 in Big K 1. To my knowledge, this is the first time a magazine has given this machine a good review other than to praise the graphics and liken it to a video games machine. Can you recommend a good basic manual for the Atari?

Also, I take a Spectrum 48K to sea with me as it is easier to carry than the Atari. No-one on board has had any luck at all with Valhalla. We are getting desperate! Can you offer any clues?

A. C. Lowe, M.S. Esso Tees, Somewhere at Sea.

The Editor writes: Well, hello, sailor! This question of a decent first-user manual for the Atari machines is a thorny one. There is an excellent expert manual *De Re Atari*, by Chris Crawford — but basic BASIC (as it were) is either incomprehensible, maths-obsessed and boring, or Hi-folks over-the-top chat-show style. On reflection, the latter — *Inside Atari Basic*, by Bill Carriss — is probably the best bet. I learned on it, anyway.

As for Valhalla, none of us here have any clues at all. No doubt somebody out there can weigh in with a tip or two.



TOBY ABBOTT

### Wildly Underrated

BIG K is excellent — its only faults being its lack of a letters page and the rating system for games. For example, *Atic Atac* would be wildly underrated at KKK.

Tim Hardy, Bishops Stortford.

The problem, Tim, is that, with starting a letters page is that if you haven't been in existence long enough to attract letters you can't print them! As for the Rating System, we felt that too many other magazines use

cumbersome perm-any-three-from-10 grid charts underneath each game — you need a calculator to solve some of these! We use our four-option rating system (don't forget the No K's option) in order to promote good writing from the reviewers. We figure that if the reviewer hasn't told you just what you need to know in his 'copy', then no railway timetable lookalike underneath will make you any wiser. Especially as that, too (when you come down to it) is subjective. What do other readers think?

**MOGUL**

**THE HOTWARE PEOPLE**

# FIRE ANT

*Written by Mike Wacker*

AVAILABLE FOR COMMODORE 64

It's great — VIC SOFT — Heidi Jones  
"Really very addictive" — Personal Computer  
Games — Chris Anderson  
Dramatic — Roger Dean Style Graphics  
— Big & Tiny Tyler

Home Computer Games enter a new age LET  
— David Cunningham

One of the best recent releases for the CBM 64 Computer  
Games and Systems Review — Tom Takasugi

Originality, wit and lots of action — A rare combination  
Commodore Computing International — Sally Wood

Witty original and amusingly addictive  
— Which Micro — Simon Graven

As the last remaining general in  
army of ants, chosen by a team of  
scorpions, your sole purpose in life is  
to rescue the Queen Ant taken  
hostage only moments ago. Fast  
action machine code game that calls  
for a winning combination of sharp  
wits plus extra fast reflexes.

**Mogul Communications Ltd**  
PO Box 48T, TEL 437 844  
35-37 WARDOUR STREET  
LONDON W1

The first machines allowed the sampling of sounds for up to three seconds with a usable bandwidth of frequency of up to 10k. They have recently updated the hardware (called 'voice cards'), and this now means that sampling bandwidth goes up to 16k. As well as being able to sample sounds it is possible to modify and combine sounds by using the operating software. Much of the sound creating process enables the user to change the wave form of a sound with a light pen.

As well as transposing such recorded and created sounds to a keyboard the machine can record up to eight tracks of sequential information and store this in real time when the keyboard is played. Some of this recording can be edited in what is called the 'Page R Mode' and it is this software which affords the musician such fantastic compositional scope.

### Different

All the sounds in a composition can be reprogrammed if required and can be played by a completely different set of sounds. This allows for pretty wild experimentation ... as well as this, because the Fairlight has eight output ports each soundtrack can be treated differently on the recording desk, wow ... control yourselves; resist the temptation to jump on your Casio ...

Now that the sampling of sounds is all the way up to 16k the quality of sound is pretty stunning and at £24,000 plus it's pretty expensive too. But remember: you don't have to buy one (you can hire them). So if you've composed something at home it won't be too long before you can use your micro to operate a Fairlight because they'll soon have MIDI interfaces (you'll probably still need a Fairlight programmer cause they're complex machines).

The next step in the 6809 CPU Fairlight story is going to be the series 3 which will employ 16 bit (as opposed to 8 bit) microprocessors and will be able to operate as 16 track digital tape recorders (as opposed to 8 at present),

also to sample sounds for 2 minutes.

Partly as a result of the introduction of digital synths like PPGs, Fairlights, and Synclavier, synth programming has become somewhat of an art and many top producers like Trevor Horne and Martin Rushent will not venture into the studio without their programmers. So while traditional skills of musicianship are still very relevant the situation is beginning to change. In the future a combination of musical and programming skills will be needed to make music. This is already evident on the new trendy labels like Trevor Horne's ZTT.

### Combination

MIDI makes possible many more combinations of synths and mics and thus serious music making will become possible for micro hackers but it still means that you will have to have a rudimentary knowledge of keyboard playing (although other instruments can be used keyboards are still the big favourite).

But what if you can't play? Voice activated music programming is something undergoing a lot of research at the moment, but industry observers reckon that it will be at least 3-4 years before you'll be able to hum a tune into a micro-synth system and have it played with the sounds of your choice!

Sound data bases might soon be available and it looks like the price of Emulator type technology seems sure to come down within the next few years.

A lot of software for writing music on popular micro's (using a keyboard) will have to be written and a lot more MIDI compatible hardware should be coming onto the market. Meanwhile, hack on ... and if you've got some related progs, send them in.

*P.S. I would like to thank Phil Nicholas for his help in preparing this article.*

For information about products mentioned in this article, write to 'Q' at: BIG K (music) IPC Magazines Kings Reach Tower Stamford St. LONDON SE1 9LS

# NEXT MONTH IN BIG K ...

YOU CAN'T DO THIS WITH BASIC ...

TV effects machines such as the Quantel Paintbox are of such high definition that 1 MB of RAM is needed to store a single frame. We check out Quantel and other gadgets in a special report.

### 25 HUMAN-ZAPPING GAMES

The Misunderstood Alien's point of view in a special software review.

### IT'S OUR KIND OF TOWN

Chicago is where they hold the world's premier computer trade fair. BIG K's RICHARD BURTON was there.

and not forgetting ...

**OUR INCREDIBLE BIG KOMPETITION: WIN A WEEK IN FLORIDA FOR TWO, including all expenses, £500 cash, and a trip to NASA.**

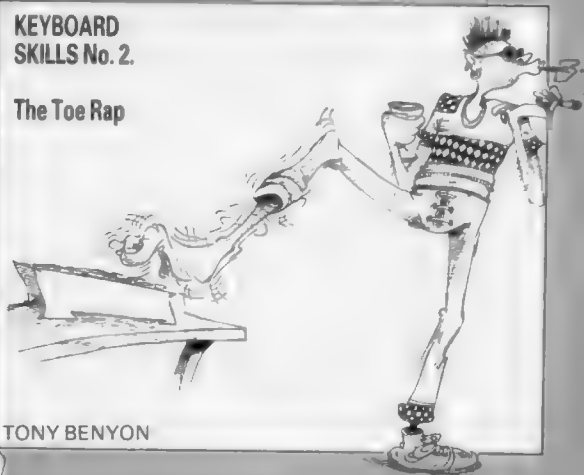
plus

**DORKSLAYER / ARCADE ALLEY / LETTER-BASE / EXPANDED SOFTWARE REVIEW SECTION / TYPE-IN GAMES PROGS**

**AND MUCH, MUCH MORE!**

### KEYBOARD SKILLS No. 2.

#### The Toe Rap



TONY BENYON



# MAIL ORDER ADVERTISING

## British Code of Advertising Practice

Advertisements in this publication are required to conform to the British Code of Advertising Practice. In respect of mail order advertisements where money is paid in advance, the code requires advertisers to fulfil orders within 28 days, unless a longer delivery period is stated. Where proofs are returned undamaged within seven days, the purchaser's money must be refunded. Please retain proof of postage/despatch, as this may be needed.

## Mail Order Protection Scheme

If you order goods from Mail Order advertisements in this magazine and pay by post in advance of delivery, BIG K will consider you for compensation if the Advertiser should become insolvent or bankrupt, provided:

- (1) You have not received the goods or had your money returned; and
- (2) You write to the Publisher of BIG K summarising the situation not earlier than 28 days from the day you sent your order and not later than two months from that day.

Please do not wait until the last moment to inform us. When you write, we will tell you how to make your claims and what evidence of payment is required.

We guarantee to meet claims from readers made in accordance with the above procedure as soon as possible after the Advertiser has been declared bankrupt or insolvent.

This guarantee covers only advance payment sent in direct response to an advertisement in this magazine not, for example, payment made in response to catalogues etc, received as a result of answering such advertisements. Classified advertisements are excluded.

ZX81/16K  
ZX Spectrum 48K

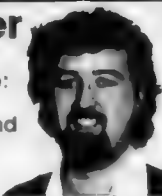
## The No.1\* Football Game


### Football Manager

Designed by Kevin Toms


**Some of the features of the game:**

- ★ Matches in 3D graphics
- ★ Transfer market ★ Promotion and relegation ★ F.A. Cup matches ★ Injury problems ★ Full league tables ★ Four Divisions





★ Pick your own team for each match. ★ As many seasons as you like ★ Managerial rating ★ 7 skill levels ★ Save game facility.



**\* ZX81 Chart**  
Home Computing Weekly  
1 8 83 and 1 11 83.

Comments about the game from press and our customers.

FOOTBALL MANAGER is the best game I have yet seen on the Spectrum and my personal favourite of all the games on any machine. In the ordinary person it is an excellent view of what can be done in the field of computer games. The crowning glory of this game is the short set pieces of match highlights which show little stick men running around a pitch shooting, defending and scoring. It is a compulsive game but people who cannot take game sessions of 9 hours or so, which happened on one happy Sunday, will be grateful to know that there is a save to tape option FOOTBALL MANAGER has everything it could. The original Addictive Games certainly deserve the name. Rating: 10/20 (Practical Computing - August 1983)

From Software Magazine, International PC

Prices: Spectrum 48K £5.95  
ZX81 16K £3.95

**Addictive Games**  
PO BOX 100, FINE HILL  
BOURNEMOUTH, Dorset

Dealers! For urgent stocks send your headed notepaper direct to  
01420 222222

## DUCKWORTH HOME COMPUTING

a new series

All books written by Peter Gerrard, former editor of *Commodore Computing International*, author of two top-selling adventure games for the Commodore 64, or by Kevin Bergin. Both are regular contributors to *Personal Computer News*, *Which Micro?* and *Software Review*.

### EXPLORING ADVENTURES

A complete look at the fabulous world of Adventure Games for your computer. Starting with an introduction to adventures, and their early history, it takes you gently through the basic programming necessary before you can start writing your own games. Inputting information, room mapping, movement vocabulary, and everything required to write an adventure game are explored in detail. There follow a number of adventure scenarios, just to get started, and finally three complete listings written especially for your machine, which will send you off into wonderful worlds where almost anything can happen. The three games listed in each book are available on one cassette at £7.95. The complete guide to adventure games, playing, writing and solving them. Peter Gerrard is the author of Romik's two top-selling adventure games - *Fools Gold* and *Tomb of Xeipos*.

EXPLORING ADVENTURES ON THE COMMODORE 64	£5.95
EXPLORING ADVENTURES ON THE VIC	£5.95
* Two of the games require 16K expansion and the third 32K	
EXPLORING ADVENTURES ON THE SPECTRUM 48K	£6.95
EXPLORING ADVENTURES ON THE ORIC 48K	£6.95
EXPLORING ADVENTURES ON THE DRAGON	£6.95
EXPLORING ADVENTURES ON THE BBC Model B	£6.95
EXPLORING ADVENTURES ON THE ELECTRON	£6.95

Other titles in the series include *Using the Commodore 64*, *The Beginner's Guide to Computers and Computing*, *Sprites & Sound on the 64*, *12 Simple Electronic Projects for the VIC*, *Will You Still Love Me When I'm 64*, *Advanced Basic & Machine Code Programming on the VIC*, *Advanced Basic & Machine Code Programming on the 64*, as well as *Pocket Handbooks for the VIC*, *64*, *Dragon* and *BBC Model B*.

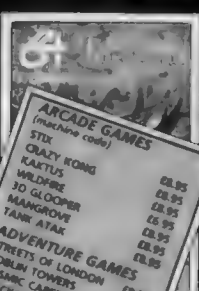
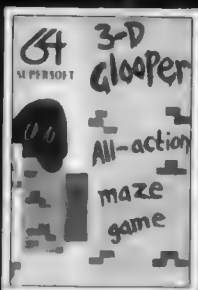
Write in for a descriptive leaflet (with details of cassettes)



The Old Piano Factory, 43 Gloucester Crescent, London NW1 7DY  
Tel: 01-485 3484

# CAN YOU BEAT OUR GREAT GAMES

We've got the biggest (and best) selection of games for the Commodore 64. We think they're unbeatable



ARCADE GAMES (machine code)	
STX	£8.95
CRAZY KONG	£8.95
KARTUS	£8.95
WILDYRE	£8.95
3D GLOOPER	£8.95
MANGROVE	£8.95
TANK ATAK	£8.95
STREETS OF LONDON	£8.95
ADVENTURE GAMES	
GOLBIN TOWERS	£9.95
COSMIC CAPERS	£9.95
CRACKS OF FIRE	£7.95
FORESTLAND	£7.95
FANTASY GAMES	£8.95
HALLS OF DEATH	£8.95
LORD OF THE BALROGS	£8.95

These prices include VAT  
Post 15p

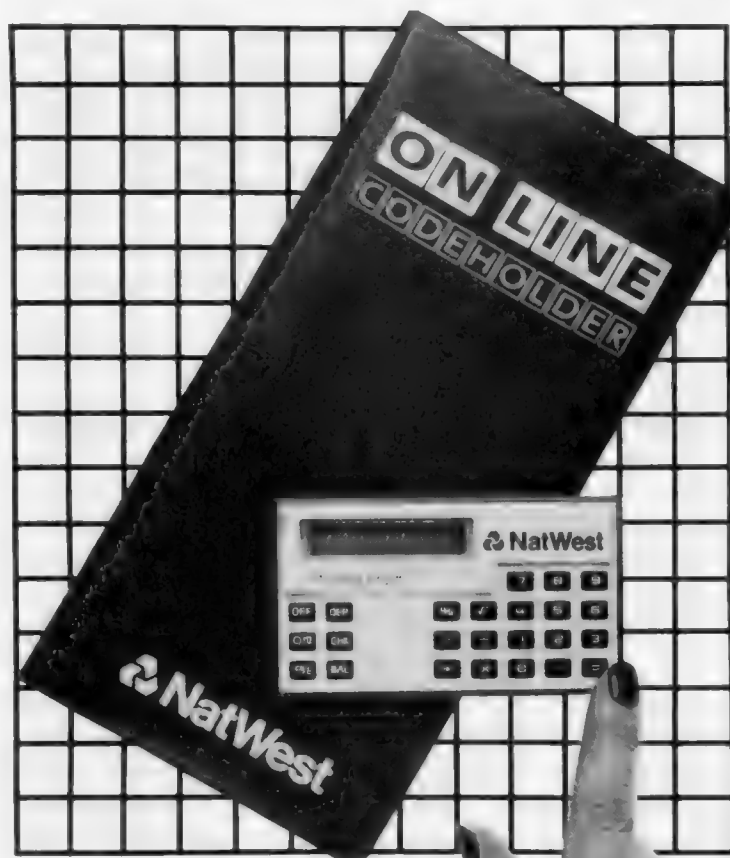
## MORE THAN GAMES...

Our FREE catalogue lists dozens of programs for your Commodore 64 to help you run your business, write programs, or just enjoy yourself. We've been producing top quality software since 1978. So if you want the best, just remember our name...

# SUPERSOFT

SUPERSOFT, Winthorpe House, Canning Road, Waltham, Harrow, Middlesex, HA3 7SJ Telephone: 01-861 1166

# POCKET THIS WALLET AND CALCULATOR. THEN WORK OUT HOW MUCH YOU'VE SAVED.



When you open a savings account you want to keep track of how much you've got in it.

That's why the first thing we give you when you open a NatWest ON LINE account is a calculator. A wallet thin affair straight out of 1985, with a continuous memory that keeps your balance even when the machine is switched off.

Not that you won't receive six monthly statements of your account. But as an ON LINE Codeholder you'll have the chance to buy the things you want through a special telephone ordering system. And since you can't buy what you can't afford, you'll need to know how much you can spend before you pick up the phone.

The calculator comes in a stylish wallet along with your Codeholder card. On this card you will keep your personal number - the one you must quote when ordering items from the exclusive catalogue you will also receive upon joining the scheme.

The catalogue contains a wide range of specially selected goods, including electronic games, cameras and even a portable TV.

Of course, you don't have to buy from the catalogue if you don't want to. Leave your savings in your account and they will earn "maximum interest". And we won't deduct income tax from the interest payments - unlike the building societies.

As an ON LINE saver you will regularly receive a special magazine containing features on music, careers and fashion.

You don't need a calculator to tell you that all in this adds up to a pretty impressive package.

To open a NatWest ON LINE account you need £5 and which £2 covers maintenance.

Drop into your local NatWest branch today and do it.

**NatWest**  
The Action Bank

NatWest is a member of the NatWest Group, which is a subsidiary of NatWest plc.

All figures are estimates only. The actual figures may vary. The figures are based on the figures for the year ending 31st March 1985. The figures are based on the figures for the year ending 31st March 1985. The figures are based on the figures for the year ending 31st March 1985.



# RIVER RESCUE

**YOU'RE THEIR ONLY HOPE...**

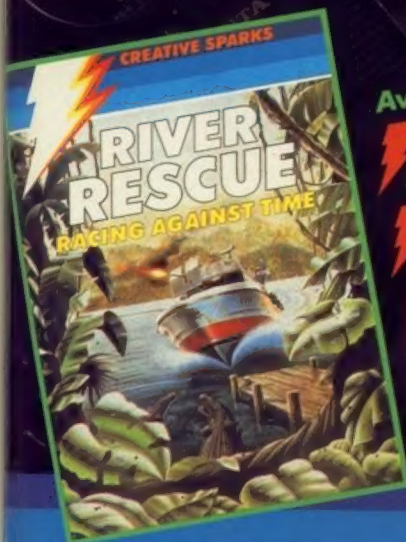
... And you don't have to read pages of instructions to get started. It's a fast playable game that's extremely challenging and far from being a pushover.

A team of important scientists have become trapped in a dangerous jungle and their only way out is via the river...

You are the owner of a high power river boat and it's your job to rescue them.

Navigating one of the wildest, most dangerous rivers in the world, you must steer your craft up the winding river, avoiding hazardous islands, crocodiles and floating logs, in your attempt to save lives.

This fast action, high energy game combines a smooth scrolling screen with superb sound and graphics ensuring hours of enjoyment.



Available on

**COMMODORE 64**  
CASSETTE

£7.95

**SPECTRUM 48K**  
CASSETTE

£6.95

**VIC 20**  
CARTRIDGE

£9.95

**ATARI**  
CASSETTE

£8.95

**CREATIVE  
SPARKS**

STRIKES AGAIN

# ADVERTISEMENT INDEX

Activision .....	58	NatWest .....	94
Addictive .....	92	Phoenix .....	39
AGF Hardware .....	82	Prism .....	64/65
Anirog .....	47	Postern .....	81
Atari .....	16/17	Romik .....	87
Audiogenic .....	Cov. 2	Salamander .....	21
Automata .....	32	Silica .....	71
Cascade .....	43	Simonsoft .....	51
Cheetah .....	55	Sinclair Research .....	23
Creative Sparks .....	95	Soft Machine .....	43
Discount Soft .....	57	Software Index .....	4
Duckworth .....	92	Software Invasion .....	74
Filesixty .....	86	Supersoft .....	93
Imagine .....	2	System 3 .....	79
Incentive .....	5	Thor .....	9, 31
Interceptor .....	Cov. 4	Ultimate .....	80
K-Tel .....	7	Vic Odds .....	30
Lothlorien .....	33	Video Force .....	96
Microdeal .....	8	Video Palace .....	Cov. 3
Micromania .....	10	Virgin Games .....	4
Mirrorsoft .....	56	Yamaha .....	63
Mogul .....	90		

## WARRIOR'S REVENGE

Land Of No Return



Send cheque or P.O. for £5.95 to:

## WARRIORS REVENGE

### LAND OF NO RETURN

c/o VIDEO FORCE,

115 Greenend Rd.,

Sawtry,

Cambridge,

Tel No: 0487 830940

Please allow 28 days for delivery)



WHO WILL JOIN THE  
EVIL DEAD  
NEXT?

FROM BRITAIN'S MOST  
POPULAR HORROR FILM  
COMES A MOST  
EXCITING COMPUTER GAME

A FAST MOVING GAME  
OF SKILL AND STRATEGY  
FOR THE COMMODORE 64



THE GAME THAT GUARANTEES SLEEPLESS NIGHTS!

AVAILABLE FROM  
ALL GOOD COMPUTER  
GAMES STOCKISTS INCLUDING  
THE VIDEO PALACE  
100 OXFORD STREET, LONDON W1.



DISTRIBUTED BY  
PALACE VIRGIN GOLD  
69 FLEMPTON ROAD,  
LONDON E10 7NL  
TELEPHONE 01 539 5568



# TALES OF THE ARABIAN NIGHTS

Full of Eastern Promise!

FROM  
**INTERCEPTOR  
SOFTWARE**

THE SAGA OF IMRAHIL  
THE KALENDAR PRINCE  
ON A QUEST TO FREE  
THE PRINCESS ANITRA  
FROM THE HAREM OF THE  
EVIL SULTAN SALADIN.

WRITTEN BY IAN GRAY  
CONTAINS OVER 3 MINUTES  
OF EASTERN MUSIC BY CHRIS COX  
PRODUCED BY RICHARD PAUL JONES

ONLY  
£7.00  
ON CASSETTE  
£9.00  
ON DISK

CONTAINS  
**SPEECH**

NO HARDWARE REQUIRED

SUITABLE FOR THE

**commodore 64**

NOW WITH **ULTRA LOAD** FAST LOADING

**INTERCEPTOR  
MICRO'S**

LINDON HOUSE, THE GREEN, TADLEY, HAMPSHIRE

TEL (07356) 71145

AVAILABLE NOW  
FROM  
ALL GOOD COMPUTER  
RETAILERS